FCC SAR Test Report

APPLICANT	:	**CT Asia**
EQUIPMENT	:	**Tablet**
BRAND NAME	:	**BLU**
MODEL NAME	:	**TOUCHBOOK G7**
FCC ID	:	**YHLBLUTBG7**
STANDARD	:	**FCC 47 CFR Part 2 (2.1093) ANSI/IEEE C95.1-1992 IEEE 1528-2003**

We, SPORTON INTERNATIONAL (SHENZHEN) INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and had been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL (SHENZHEN) INC., the test report shall not be reproduced except in full.

Eric Huang

Reviewed by: Eric Huang / Deputy Manager

Jones Tsai

Approved by: Jones Tsai / Manager

ilac-MRA

TAF
Testing Laboratory
2353

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA560304	Rev. 01	Initial issue of report	Jul. 14, 2015

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **CT Asia, Tablet, TOUCHBOOK G7**, are as follows.

Equipment Class	Frequency Band	Highest SAR Summary		
		Head (Separation 0mm) 1g SAR (W/kg)	Body (Separation 0mm) 1g SAR (W/kg)	Highest Simultaneous Transmission 1g SAR (W/kg)
PCB	GSM850	0.54	1.13	1.26
	GSM1900	0.71	1.17	
	WCDMA Band V	0.70	1.05	
	WCDMA Band IV	**0.89**	**1.18**	
	WCDMA Band II	0.82	1.18	
DTS	WLAN 2.4GHz Band	<0.10	1.05	1.05
DSS	Bluetooth	<0.10	<0.10	1.26
Date of Testing:		2015/06/24~2015/06/28		

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2003.

2. Administration Data

Testing Laboratory	
Test Site	SPORTON INTERNATIONAL (SHENZHEN) INC.
Test Site Location	1F & 2F, Building A, Morning Business Center, No. 4003 ShiGu Rd., Xili Town, Nanshan District, Shenzhen, Guangdong, P. R. China TEL: +86-755-8637-9589 FAX: +86-755-8637-9595

Applicant	
Company Name	CT Asia
Address	Unit1309-11,13th Floor 9 Wing Hong Street Cheung Sha Wan Kowloon, Hong Kong

Manufacturer	
Company Name	wanlida Group Co., Ltd.
Address	No.618, Jiahe Road, Wanlida Industry Zone, Xiamen, Fujian, China. 361006

3. Guidance Standard

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards:

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2003
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r03
- FCC KDB 865664 D02 SAR Reporting v01r01
- FCC KDB 447498 D01 General RF Exposure Guidance v05r02
- FCC KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r02
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r01
- FCC KDB 616217 D04 SAR for laptop and tablets v01r01
- FCC KDB 941225 D01 3G SAR Procedures v03

4. Equipment Under Test (EUT)

4.1 General Information

Product Feature & Specification	
Equipment Name	Tablet
Brand Name	BLU
Model Name	TOUCHBOOK G7
FCC ID	YHLBLUTBG7
IMEI Code	002107240163148
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Mode	· GSM/GPRS · RMC/AMR 12.2Kbps · HSDPA · HSUPA · HSPA+ (Downlink Only) · 802.11b/g/n HT20/HT40 · Bluetooth v3.0+EDR, Bluetooth v4.0-LE
HW Version	8859C
SW Version	f6901_L0_MP2
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
EUT Stage	Pre-Production
Remark: 1. This device supports GRPS mode up to multi-slot class12. 2. This device does not support EGPRS and DTM operation. 3. This device has voice function.	

4.2 Maximum Tune-up Limit

Mode	Burst average power(dBm)	
	GSM 850	GSM 1900
GSM (GMSK, 1 Tx slot)	28.50	24.00
GPRS (GMSK, 1 Tx slot)	28.50	24.00
GPRS (GMSK, 2 Tx slots)	25.00	21.50
GPRS (GMSK, 3 Tx slots)	24.00	19.50
GPRS (GMSK, 4 Tx slots)	22.50	18.50

Mode	Average power(dBm)		
	WCDMA Band V	WCDMA Band II	WCDMA Band IV
AMR 12.2Kbps	19.00	15.50	17.00
RMC 12.2Kbps	19.00	15.50	17.00
HSDPA Subtest-1	18.00	14.50	15.50
HSDPA Subtest-2	18.00	14.50	15.50
HSDPA Subtest-3	17.50	14.50	15.00
HSDPA Subtest-4	17.50	14.50	15.00
HSUPA Subtest-1	18.00	15.50	15.00
HSUPA Subtest-2	16.00	14.00	14.00
HSUPA Subtest-3	17.00	15.00	15.00
HSUPA Subtest-4	15.50	14.50	13.00
HSUPA Subtest-5	18.00	15.00	15.50

Mode		Average Power (dBm)
2.4GHz	802.11b	13.00
	802.11g	12.50
	802.11n-HT20	12.50
	802.11n-HT40	12.50
Bluetooth v3.0 + EDR		7.00
Bluetooth v4.0 LE		0

5. RF Exposure Limits

5.1 Uncontrolled Environment

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

5.2 Controlled Environment

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. The exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Limits for Occupational/Controlled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.4	8.0	20.0

Limits for General Population/Uncontrolled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.08	1.6	4.0

1. Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

6. Specific Absorption Rate (SAR)

6.1 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

6.2 SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$\mathbf{SAR} = \frac{\mathbf{d}}{\mathbf{dt}}\left(\frac{\mathbf{dW}}{\mathbf{dm}}\right) = \frac{\mathbf{d}}{\mathbf{dt}}\left(\frac{\mathbf{dW}}{\boldsymbol{\rho}\mathbf{dv}}\right)$$

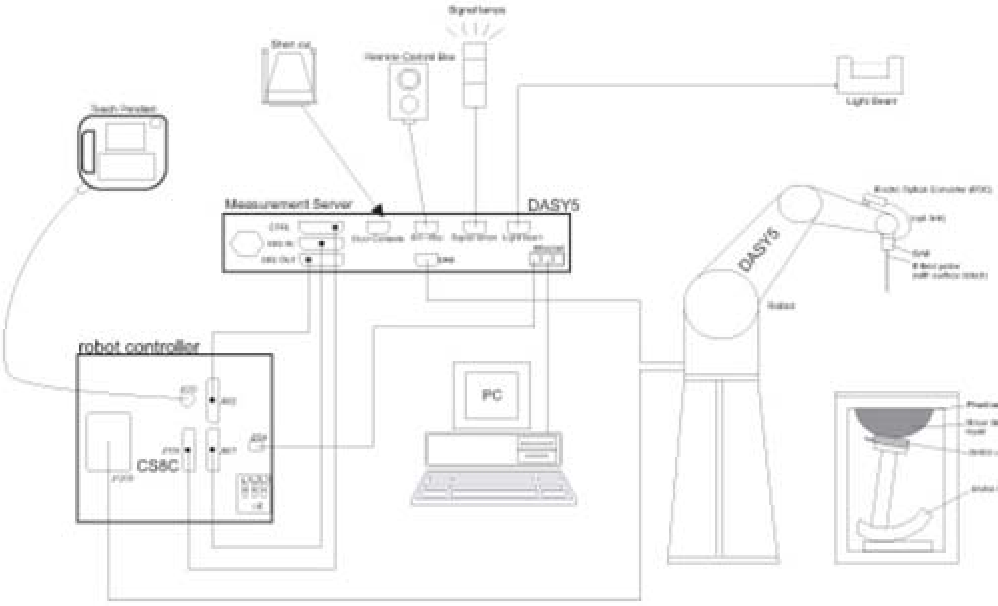
SAR is expressed in units of Watts per kilogram (W/kg)

$$\mathbf{SAR} = \frac{\boldsymbol{\sigma}|\mathbf{E}|^2}{\boldsymbol{\rho}}$$

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

7. System Description and Setup

The DASY system used for performing compliance tests consists of the following items:



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP or Win7 and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

8. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

(a) For WWAN power measurement, use base station simulator to configure EUT WWAN transmission in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.
(b) Read the WWAN RF power level from the base station simulator.
(c) For WLAN/BT power measurement, use engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power in each supported wireless interface and frequency band
(d) Connect EUT RF port through RF cable to the power meter, and measure WLAN/BT output power

<SAR measurement>

(a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power, in the highest power channel.
(b) Place the EUT in the positions as Appendix D demonstrates.
(c) Set scan area, grid size and other setting on the DASY software.
(d) Measure SAR results for the highest power channel on each testing position.
(e) Find out the largest SAR result on these testing positions of each band
(f) Measure SAR results for other channels in worst SAR testing position if the reported SAR of highest power channel is larger than 0.8 W/kg

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

(a) Power reference measurement
(b) Area scan
(c) Zoom scan
(d) Power drift measurement

8.1 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

(a) Extraction of the measured data (grid and values) from the Zoom Scan
(b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
(c) Generation of a high-resolution mesh within the measured volume
(d) Interpolation of all measured values form the measurement grid to the high-resolution grid
(e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
(f) Calculation of the averaged SAR within masses of 1g and 10g

8.2 Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

8.3 Area Scan

The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum found in the scanned area, within a range of the global maximum. The range (in dB0 is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan), if only one zoom scan follows the area scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of zoom scans has to be increased accordingly.

Area scan parameters extracted from FCC KDB 865664 D01v01r03 SAR measurement 100 MHz to 6 GHz.

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	$\frac{1}{2}\cdot\delta\cdot\ln(2) \pm 0.5$ mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

8.4 Zoom Scan

Zoom scans are used assess the peak spatial SAR values within a cubic averaging volume containing 1 gram and 10 gram of simulated tissue. The zoom scan measures points (refer to table below) within a cube shoes base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the zoom scan evaluates the averaged SAR for 1 gram and 10 gram and displays these values next to the job's label.

Zoom scan parameters extracted from FCC KDB 865664 D01v01r03 SAR measurement 100 MHz to 6 GHz.

<table>
<tr><td colspan="3"></td><td>$\leq$ 3 GHz</td><td>> 3 GHz</td></tr>
<tr><td colspan="3">Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}</td><td>$\leq$ 2 GHz: $\leq$ 8 mm
2 – 3 GHz: $\leq$ 5 mm*</td><td>3 – 4 GHz: $\leq$ 5 mm*
4 – 6 GHz: $\leq$ 4 mm*</td></tr>
<tr><td rowspan="3">Maximum zoom scan spatial resolution, normal to phantom surface</td><td colspan="2">uniform grid: $\Delta z_{Zoom}(n)$</td><td>$\leq$ 5 mm</td><td>3 – 4 GHz: $\leq$ 4 mm
4 – 5 GHz: $\leq$ 3 mm
5 – 6 GHz: $\leq$ 2 mm</td></tr>
<tr><td rowspan="2">graded grid</td><td>$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface</td><td>$\leq$ 4 mm</td><td>3 – 4 GHz: $\leq$ 3 mm
4 – 5 GHz: $\leq$ 2.5 mm
5 – 6 GHz: $\leq$ 2 mm</td></tr>
<tr><td>$\Delta z_{Zoom}(n>1)$: between subsequent points</td><td colspan="2">$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$</td></tr>
<tr><td>Minimum zoom scan volume</td><td colspan="2">x, y, z</td><td>$\geq$ 30 mm</td><td>3 – 4 GHz: $\geq$ 28 mm
4 – 5 GHz: $\geq$ 25 mm
5 – 6 GHz: $\geq$ 22 mm</td></tr>
<tr><td colspan="5">Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.
* When zoom scan is required and the <u>reported</u> SAR from the area scan based 1-g SAR estimation procedures of KDB 447498 is $\leq$ 1.4 W/kg, $\leq$ 8 mm, $\leq$ 7 mm and $\leq$ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.</td></tr>
</table>

8.5 Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

8.6 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASY measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drifts more than 5%, the SAR will be retested.

9. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	835MHz System Validation Kit	D835V2	4d091	Nov. 21, 2014	Nov. 20, 2015
SPEAG	1750MHz System Validation Kit	D1750V2	1069	Nov. 21, 2014	Nov. 20, 2015
SPEAG	1900MHz System Validation Kit	D1900V2	5d118	Nov. 21, 2014	Nov. 20, 2015
SPEAG	2450MHz System Validation Kit	D2450V2	840	Nov. 19, 2014	Nov. 18, 2015
SPEAG	Data Acquisition Electronics	DAE4	1303	Dec. 11, 2014	Dec. 10, 2015
SPEAG	Dosimetric E-Field Probe	EX3DV4	3819	Nov. 13, 2014	Nov. 12, 2015
SPEAG	SAM Twin Phantom	QD 000 P40 CD	TP-1671	NCR	NCR
SPEAG	ELI4 Phantom	QD OVA 002 AA	TP-1149	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Agilent	Wireless Communication Test Set	E5515C	MY50267224	Sep. 29, 2014	Sep. 28, 2015
R&S	Network Analyzer	ZVB8	100106	Sep. 29, 2014	Sep. 28, 2015
Speag	Dielectric Assessment KIT	DAK-3.5	1032	NCR	NCR
R&S	Signal Generator	SMBV100A	258305	Jan. 23, 2015	Jan. 22, 2016
Anritsu	Power Sensor	MA2411B	1207253	Jan. 28, 2015	Jan. 27, 2016
Anritsu	Power Meter	ML2495A	1218010	Jan. 28, 2015	Jan. 27, 2016
ARRA	Power Divider	A3200-2	N/A	NA	NA
R&S	CBT BLUETOOTH TESTER	CBT	100783	Aug. 11, 2014	Aug. 10, 2015
R&S	Spectrum Analyzer	FSP30	101362	Sep. 29, 2014	Sep. 28, 2015
Agilent	Dual Directional Coupler	778D	50422	Note1	
Woken	Attenuator 1	WK0602-XX	N/A	Note1	
PE	Attenuator 2	PE7005-10	N/A	Note1	
PE	Attenuator 3	PE7005- 3	N/A	Note1	
AR	Power Amplifier	5S1G4M2	0328767	Note1	
Mini-Circuits	Power Amplifier	ZVE-3W	162601250	Note1	
Mini-Circuits	Power Amplifier	ZHL-42W+	13440021344	Note1	

General Note:

1. Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check source.

10. System Verification

10.1 Tissue Verification

The following tissue formulations are provided for reference only as some of the parameters have not been thoroughly verified. The composition of ingredients may be modified accordingly to achieve the desired target tissue parameters required for routine SAR evaluation.

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (εr)
For Head								
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
For Body								
835	50.8	48.2	0	0.9	0.1	0	0.97	55.2
1800, 1900, 2000	70.2	0	0	0.4	0	29.4	1.52	53.3
2450	68.6	0	0	0	0	31.4	1.95	52.7

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Tissue Type	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
835	Head	22.6	0.916	41.029	0.90	41.50	1.78	-1.13	±5	2015/6/27
1750	Head	22.7	1.378	41.340	1.37	40.10	0.58	3.09	±5	2015/6/27
1900	Head	22.8	1.455	40.068	1.40	40.00	3.93	0.17	±5	2015/6/27
2450	Head	22.6	1.829	40.081	1.80	39.20	1.61	2.25	±5	2015/6/28
835	Body	22.6	0.967	55.899	0.97	55.20	-0.31	1.27	±5	2015/6/25
1750	Body	22.7	1.526	52.010	1.49	53.40	2.42	-2.60	±5	2015/6/24
1900	Body	22.9	1.542	53.532	1.52	53.30	1.45	0.44	±5	2015/6/26
2450	Body	22.9	1.992	52.302	1.95	52.70	2.15	-0.76	±5	2015/6/28

10.2 System Performance Check Results

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10 %. Below table shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion and the plots can be referred to Appendix A of this report.

Date	Frequency (MHz)2	Tissue Type2	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2015/6/27	835	Head	250	D835V2-4d091	3819	1303	2.46	9.11	9.84	8.01
2015/6/27	1750	Head	250	D1750V2-1069	3819	1303	10.10	37.10	40.4	8.89
2015/6/27	1900	Head	250	D1900V2-5d118	3819	1303	10.60	40.10	42.4	5.74
2015/6/28	2450	Head	250	D2450V2-840	3819	1303	13.20	52.30	52.8	0.96
2015/6/25	835	Body	250	D835V2-4d091	3819	1303	2.34	9.60	9.36	-2.50
2015/6/24	1750	Body	250	D1750V2-1069	3819	1303	10.30	38.10	41.2	8.14
2015/6/26	1900	Body	250	D1900V2-5d118	3819	1303	10.90	40.00	43.6	9.00
2015/6/28	2450	Body	250	D2450V2-840	3819	1303	13.60	51.00	54.4	6.67

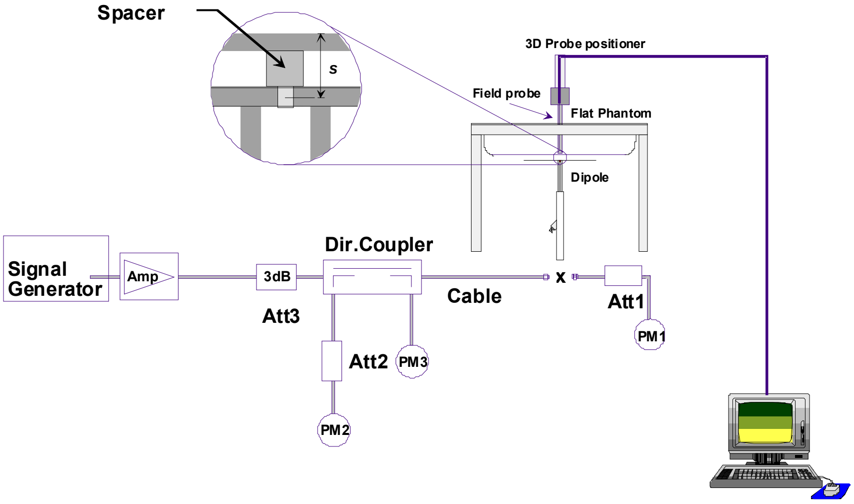


Fig 8.3.1 System Performance Check Setup

Fig 8.3.2 Setup Photo

11. RF Exposure Positions

11.1 Ear and handset reference point

Figure 9.1.1 shows the front, back, and side views of the SAM phantom. The center-of-mouth reference point is labeled “M,” the left ear reference point (ERP) is marked “LE,” and the right ERP is marked “RE.” Each ERP is 15 mm along the B-M (back-mouth) line behind the entrance-to-ear-canal (EEC) point, as shown in Figure 9.1.2 The Reference Plane is defined as passing through the two ear reference points and point M. The line N-F (neck-front), also called the reference pivoting line, is normal to the Reference Plane and perpendicular to both a line passing through RE and LE and the B-M line (see Figure 9.1.3). Both N-F and B-M lines should be marked on the exterior of the phantom shell to facilitate handset positioning. Posterior to the N-F line the ear shape is a flat surface with 6 mm thickness at each ERP, and forward of the N-F line the ear is truncated, as illustrated in Figure 9.1.2. The ear truncation is introduced to preclude the ear lobe from interfering with handset tilt, which could lead to unstable positioning at the cheek.

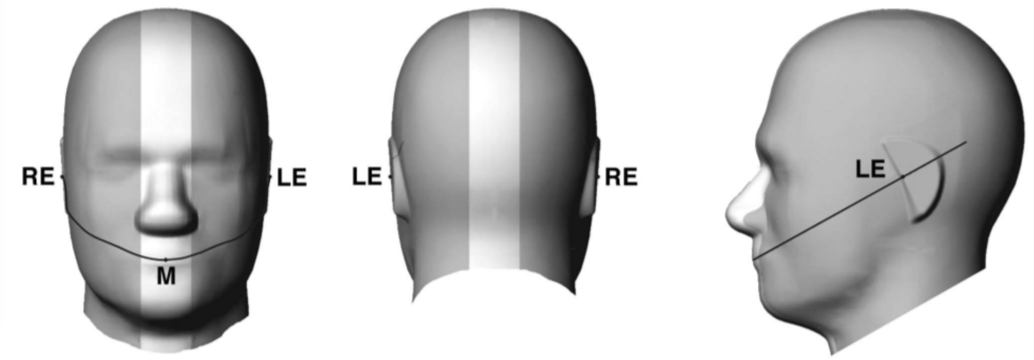


Fig 9.1.1 Front, back, and side views of SAM twin phantom

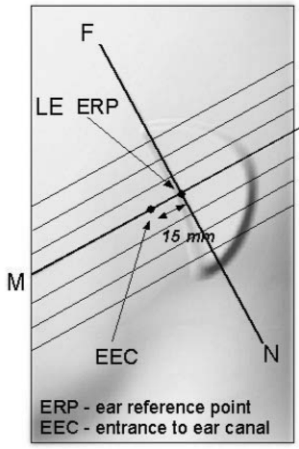


Fig 9.1.2 Close-up side view of phantom showing the ear region.

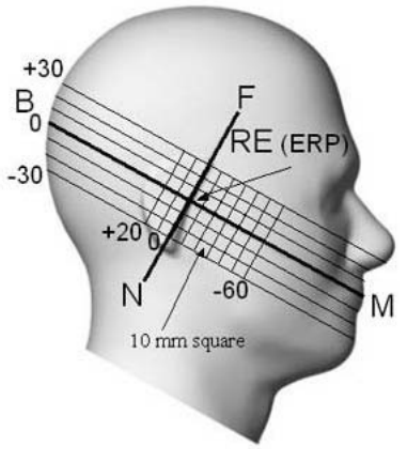


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

11.2 Definition of the cheek position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. Define two imaginary lines on the handset—the vertical centerline and the horizontal line. The vertical centerline passes through two points on the front side of the handset—the midpoint of the width wt of the handset at the level of the acoustic output (point A in Figure 9.2.1 and Figure 9.2.2), and the midpoint of the width wb of the bottom of the handset (point B). The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output (see Figure 9.2.1). The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset (see Figure 9.2.2), especially for clamshell handsets, handsets with flip covers, and other irregularly-shaped handsets.
3. Position the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 9.2.3), such that the plane defined by the vertical centerline and the horizontal line of the handset is approximately parallel to the sagittal plane of the phantom.
4. Translate the handset towards the phantom along the line passing through RE and LE until handset point A touches the pinna at the ERP.
5. While maintaining the handset in this plane, rotate it around the LE-RE line until the vertical centerline is in the plane normal to the plane containing B-M and N-F lines, i.e., the Reference Plane.
6. Rotate the handset around the vertical centerline until the handset (horizontal line) is parallel to the N-F line.
7. While maintaining the vertical centerline in the Reference Plane, keeping point A on the line passing through RE and LE, and maintaining the handset contact with the pinna, rotate the handset about the N-F line until any point on the handset is in contact with a phantom point below the pinna on the cheek. See Figure 9.2.3. The actual rotation angles should be documented in the test report.

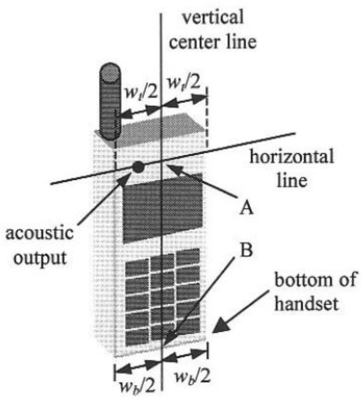


Fig 9.2.1 Handset vertical and horizontal reference lines—"fixed case

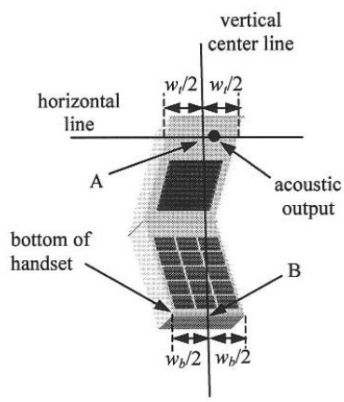


Fig 9.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

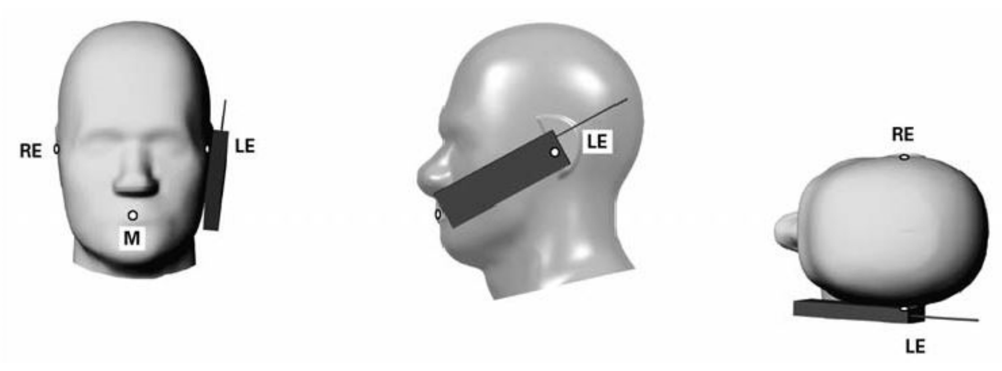


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

11.3 Definition of the tilt position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. While maintaining the orientation of the handset, move the handset away from the pinna along the line passing through RE and LE far enough to allow a rotation of the handset away from the cheek by 15°.
3. Rotate the handset around the horizontal line by 15°.
4. While maintaining the orientation of the handset, move the handset towards the phantom on the line passing through RE and LE until any part of the handset touches the ear. The tilt position is obtained when the contact point is on the pinna. See Figure 9.3.1. If contact occurs at any location other than the pinna, e.g., the antenna at the back of the phantom head, the angle of the handset should be reduced. In this case, the tilt position is obtained if any point on the handset is in contact with the pinna and a second point

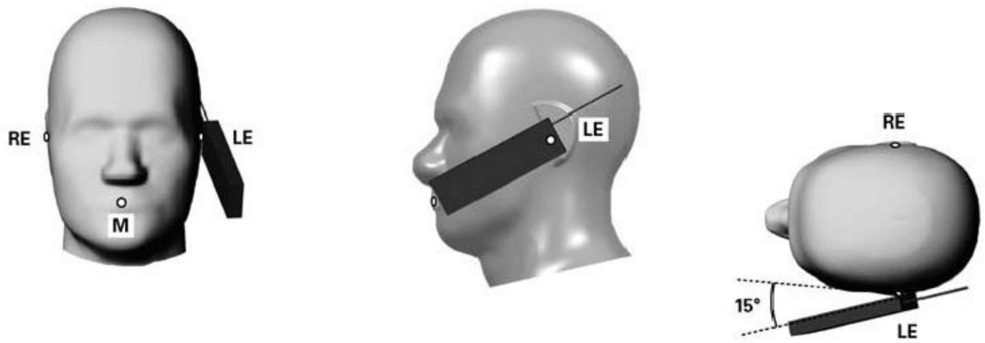


Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

11.4 SAR Testing for Tablet

This device can be used also in full sized tablet exposure conditions, due to its size. Per FCC KDB 616217, the back surface and edges of the tablet should be tested for SAR compliance with the tablet touching the phantom. The SAR exclusion threshold in KDB 447498 D01v05r02 can be applied to determine SAR test exclusion for adjacent edge configurations. The closest distance from the antenna to an adjacent tablet edge is used to determine if SAR testing is required for the adjacent edges, with the adjacent edge positioned against the phantom and the edge containing the antenna positioned perpendicular to the phantom.

12. Conducted RF Output Power (Unit: dBm)

<GSM Conducted Power>

1. Per KDB 447498 D01v05r02, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. Per KDB 941225 D01v03, for Head SAR test reduction for GSM and GPRS modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the EUT was set in GPRS (3Tx slots) for GSM850 and GPRS (4Tx slots) for GSM1900.
3. Per KDB 941225 D01v03, for Body SAR test reduction for GPRS modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the EUT was set in GPRS (3Tx slots) for GSM850 and GPRS (4Tx slots) for GSM1900.

Band GSM850	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	128	189	251		128	189	251	
Frequency (MHz)	824.2	836.4	848.8		824.2	836.4	848.8	
GSM (GMSK, 1 Tx slot)	27.88	27.93	**28.02**	28.50	18.88	18.93	19.02	19.50
GPRS (GMSK, 1 Tx slot)	27.87	27.92	28.00	28.50	18.87	18.92	19.00	19.50
GPRS (GMSK, 2 Tx slots)	24.23	24.27	24.37	25.00	18.23	18.27	18.37	19.00
GPRS (GMSK, 3 Tx slots)	23.15	23.19	23.29	24.00	18.89	18.93	19.03	19.74
GPRS (GMSK, 4 Tx slots)	21.89	21.93	22.05	22.50	18.89	18.93	19.05	19.50
Band GSM1900	Burst Average Power (dBm)			Tune-up Limit (dBm)	Frame-Average Power (dBm)			Tune-up Limit (dBm)
TX Channel	512	661	810		512	661	810	
Frequency (MHz)	1850.2	1880	1909.8		1850.2	1880	1909.8	
GSM (GMSK, 1 Tx slot)	23.24	23.41	**23.88**	24.00	14.24	14.41	14.88	15.00
GPRS (GMSK, 1 Tx slot)	23.23	23.40	23.86	24.00	14.23	14.40	14.86	15.00
GPRS (GMSK, 2 Tx slots)	20.54	20.68	21.15	21.50	14.54	14.68	15.15	15.50
GPRS (GMSK, 3 Tx slots)	18.57	18.75	19.27	19.50	14.31	14.49	15.01	15.24
GPRS (GMSK, 4 Tx slots)	17.66	17.76	18.32	18.50	14.66	14.76	15.32	15.50

Remark: The frame-averaged power is linearly scaled the maximum burst averaged power over 8 time slots.
The calculated method are shown as below:
Frame-averaged power = Maximum burst averaged power (1 Tx Slot) - 9 dB
Frame-averaged power = Maximum burst averaged power (2 Tx Slots) - 6 dB
Frame-averaged power = Maximum burst averaged power (3 Tx Slots) - 4.26 dB
Frame-averaged power = Maximum burst averaged power (4 Tx Slots) - 3 dB

<WCDMA Conducted Power>

1. The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
2. The procedures in KDB 941225 D01 are applied for 3GPP Rel. 6 HSPA to configure the device in the required sub-test mode(s) to determine SAR test exclusion.

A summary of these settings are illustrated below:

HSDPA Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting:
   i. Set Gain Factors (β_c and β_d) and parameters were set according to each
   ii. Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
   iii. Set RMC 12.2Kbps + HSDPA mode.
   iv. Set Cell Power = -86 dBm
   v. Set HS-DSCH Configuration Type to FRC (H-set 1, QPSK)
   vi. Select HSDPA Uplink Parameters
   vii. Set Delta ACK, Delta NACK and Delta CQI = 8
   viii. Set Ack-Nack Repetition Factor to 3
   ix. Set CQI Feedback Cycle (k) to 4 ms
   x. Set CQI Repetition Factor to 2
   xi. Power Ctrl Mode = All Up bits
d. The transmitted maximum output power was recorded.

Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH

Sub-test	β_c	β_d	β_d *(SF)*	β_c/β_d	β_{HS} *(Note1, Note 2)*	CM (dB) *(Note 3)*	MPR (dB) *(Note 3)*
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 *(Note 4)*	15/15 *(Note 4)*	64	12/15 *(Note 4)*	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with $\beta_{hs} = 30/15 * \beta_c$.

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and Δ_{NACK} = 30/15 with $\beta_{hs} = 30/15 * \beta_c$, and Δ_{CQI} = 24/15 with $\beta_{hs} = 24/15 * \beta_c$.

Note 3: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 11/15 and β_d = 15/15.

Setup Configuration

HSUPA Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting * :
   i. Call Configs = 5.2B, 5.9B, 5.10B, and 5.13.2B with QPSK
   ii. Set the Gain Factors (β_c and β_d) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.3, quoted from the TS 34.121
   iii. Set Cell Power = -86 dBm
   iv. Set Channel Type = 12.2k + HSPA
   v. Set UE Target Power
   vi. Power Ctrl Mode= Alternating bits
   vii. Set and observe the E-TFCI
   viii. Confirm that E-TFCI is equal to the target E-TFCI of 75 for sub-test 1, and other subtest's E-TFCI
d. The transmitted maximum output power was recorded.

Table C.11.1.3: β values for transmitter characteristics tests with HS-DPCCH and E-DCH

Sub-test	β_c	β_d	β_d *(SF)*	β_c/β_d	β_{HS} *(Note1)*	β_{ec}	β_{ed} *(Note 5) (Note 6)*	β_{ed} *(SF)*	β_{ed} *(Codes)*	CM (dB) *(Note 2)*	MPR (dB) *(Note 2)*	AG Index *(Note 6)*	E-TFCI
1	11/15 *(Note 3)*	15/15 *(Note 3)*	64	11/15 *(Note 3)*	22/15	209/225	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed}1: 47/15 β_{ed}2: 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15 *(Note 4)*	15/15 *(Note 4)*	64	15/15 *(Note 4)*	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c .
Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH, HS- DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.
Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 10/15 and β_d = 15/15.
Note 4: For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 14/15 and β_d = 15/15.
Note 5: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.
Note 6: β_{ed} can not be set directly, it is set by Absolute Grant Value.

Setup Configuration

<WCDMA Conducted Power>

General Note:
1. Per KDB 941225 D01v03, SAR for Head /Body exposure is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”.
2. Per KDB 941225 D01v03, RMC 12.2kbps setting is used to evaluate SAR. If the maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA.

Band			WCDMA Band V			WCDMA Band II			WCDMA Band IV		
TX Channel			4132	4182	4233	9262	9400	9538	1312	1413	1513
Rx Channel			4357	4407	4458	9662	9800	9938	1537	1638	1738
Frequency (MHz)			826.4	836.4	846.6	1852.4	1880	1907.6	1712.4	1732.6	1752.6
MPR (dB)	3GPP Rel 99	AMR 12.2Kbps	18.63	18.42	18.46	15.01	15.18	15.21	16.33	16.31	16.15
	3GPP Rel 99	RMC 12.2Kbps	**18.64**	18.46	18.47	15.02	15.20	**15.22**	**16.34**	16.33	16.16
0	3GPP Rel 6	HSDPA Subtest-1	17.67	17.56	17.55	14.37	14.42	14.31	15.05	15.09	15.02
0	3GPP Rel 6	HSDPA Subtest-2	17.67	17.56	17.55	14.39	14.43	14.34	15.07	15.08	15.06
0.5	3GPP Rel 6	HSDPA Subtest-3	17.19	17.11	17.08	13.95	13.95	14.04	14.57	14.62	14.56
0.5	3GPP Rel 6	HSDPA Subtest-4	17.19	17.14	17.11	13.92	13.89	14.01	14.57	14.61	14.55
0	3GPP Rel 6	HSUPA Subtest-1	17.56	17.54	17.55	15.08	15.14	15.14	14.63	14.58	14.47
2	3GPP Rel 6	HSUPA Subtest-2	15.74	15.64	15.58	13.64	13.71	13.86	13.76	13.68	13.57
1	3GPP Rel 6	HSUPA Subtest-3	16.71	16.58	16.58	14.72	14.27	14.45	14.53	14.41	14.32
2	3GPP Rel 6	HSUPA Subtest-4	15.20	15.08	15.05	13.98	14.03	14.23	12.69	12.62	12.51
0	3GPP Rel 6	HSUPA Subtest-5	17.70	17.60	17.60	14.68	14.76	14.82	15.10	15.20	15.00

<WLAN Conducted Power>

General Note:

1. Per KDB 248227 D01v02r01, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. For OFDM, in both 2.4 bands, an initial test configuration must be determined for each standalone and aggregated frequency band, according to the transmission mode configuration with the highest maximum output power specified for production units to perform SAR measurements. If the same highest maximum output power applies to different combinations of channel bandwidths, modulations and data rates, additional procedures are applied to determine which test configurations require SAR measurement. When applicable, an initial test position may be applied to reduce the number of SAR measurements required for next to the ear, UMPC mini-tablet or hotspot mode configurations with multiple test positions.
2. For 2.4 GHz 802.11b DSSS, either the initial test position procedure for multiple exposure test positions or the DSSS procedure for fixed exposure position is applied; these are mutually exclusive. For 2.4 GHz OFDM configurations, the initial test configuration is applied to measure SAR using either the initial test position procedure for multiple exposure test position configurations or the initial test configuration procedures for fixed exposure test conditions. Based on the reported SAR of the measured configurations and maximum output power of the transmission mode configurations that are not included in the initial test configuration, the subsequent test configuration and initial test position procedures are applied to determine if SAR measurements are required for the remaining OFDM transmission configurations. In general, the number of test channels that require SAR measurement is minimized based on maximum output power measured for the test sample(s).
3. For OFDM transmission configurations in the 2.4 GHz bands, When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11g/n mode is used for SAR measurement, on the highest measured output power channel for each frequency band.
4. DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures.18 The initial test position procedure is described in the following:
   a. When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band.
   b. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
   c. For all positions/configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

<2.4GHz WLAN>

	Mode	Channel	Frequency (MHz)	Data Rate	Average power (dBm)	Tune-Up Limit	Duty Cycle %
2.4GHz WLAN	802.11b	CH 1	2412	1Mbps	12.25	13.00	98.25
		CH 6	2437		12.33		
		CH 11	2462		**12.75**		
	802.11g	CH 1	2412	6Mbps	11.36	12.50	88.54
		CH 6	2437		11.76		
		CH 11	2462		12.14		
	802.11n-HT20	CH 1	2412	MCS0	11.36	12.50	88.28
		CH 6	2437		11.71		
		CH 11	2462		12.10		
	802.11n-HT40	CH 3	2422	MCS0	11.54	12.50	79.81
		CH 6	2437		11.70		
		CH 9	2452		11.81		

<2.4GHz Bluetooth>

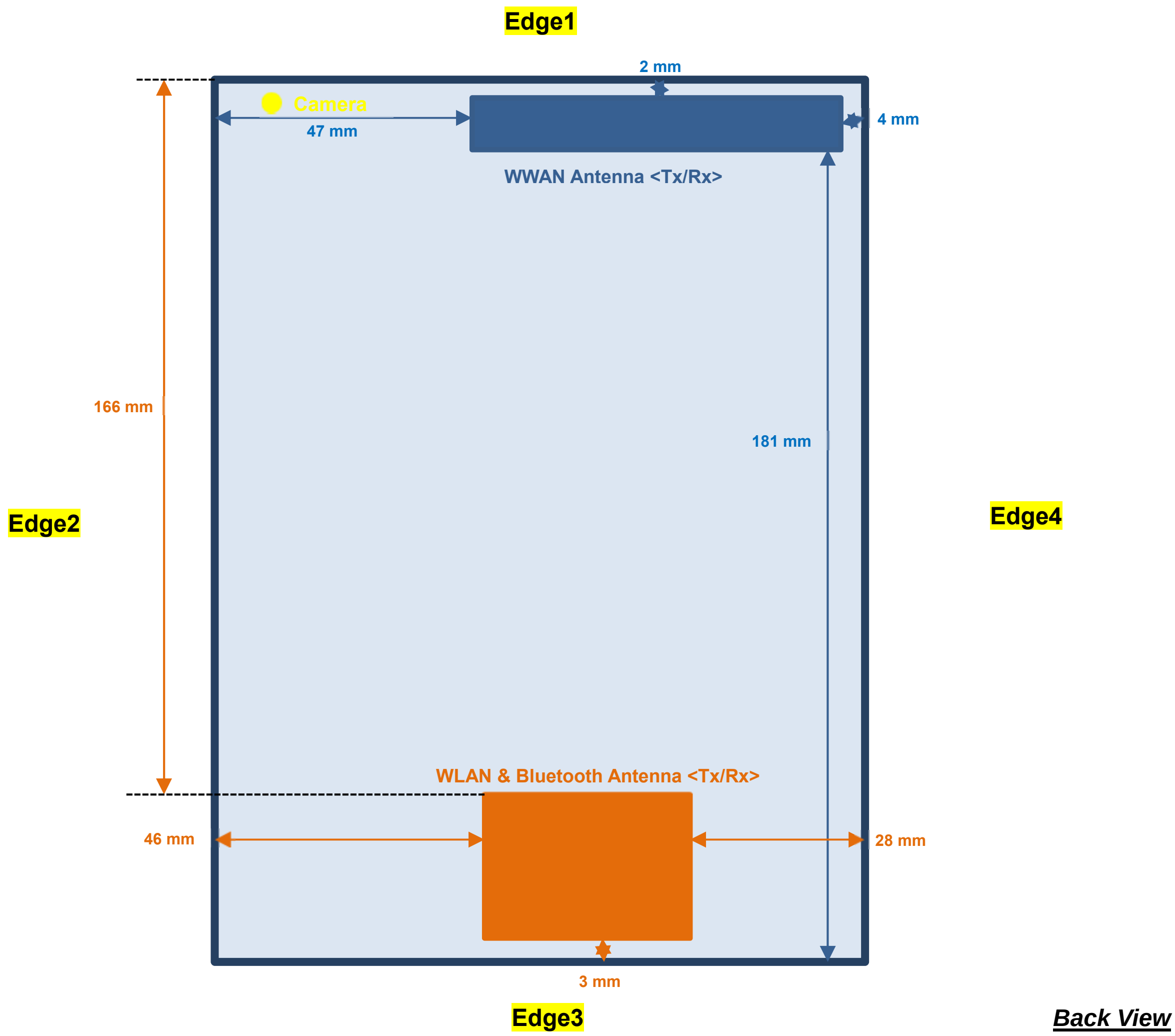
General Note:

1. For 2.4GHz Bluetooth SAR testing was selected 1Mbps, due to its highest average power.
2. The duty factor is selected theoretical 83.3% perform Bluetooth SAR testing.

Mode	Channel	Frequency (MHz)	Average power (dBm)		
			1Mbps	2Mbps	3Mbps
v3.0 with EDR	CH 00	2402	6.09	4.02	4.02
	CH 39	2441	6.46	4.38	4.42
	CH 78	2480	**6.63**	4.55	4.52

Mode	Channel	Frequency (MHz)	Average power (dBm)
			GFSK
v4.0 with LE	CH 00	2402	-1.28
	CH 19	2440	-0.95
	CH 39	2480	-1.01

13. Antenna Location



Diagonal: 212mm

<SAR test exclusion table>

General Note:

1. The below table, when the distance is < 50 mm exclusion threshold is "Ratio", when the distance is > 50 mm exclusion threshold is "mW"
2. Maximum power is the source-based time-average power and represents the maximum RF output power among production units
3. Per KDB 447498 D01v05r02, for larger devices, the test separation distance of adjacent edge configuration is determined by the closest separation between the antenna and the user.
4. Per KDB 447498 D01v05r02, standalone SAR test exclusion threshold is applied; If the test separation distance is < 5mm, 5mm is used to determine SAR exclusion threshold.
5. Per KDB 447498 D01v05r02, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:
   [(*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)] ·[√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR
   - f(GHz) is the RF channel transmit frequency in GHz
   - Power and distance are rounded to the nearest mW and mm before calculation
   - The result is rounded to one decimal place for comparison
6. Per KDB 447498 D01v05r02, at 100 MHz to 6 GHz and for *test separation distances* > 50 mm, the SAR test exclusion threshold is determined according to the following
   a) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·(f(MHz)/150)] mW, at 100 MHz to 1500 MHz
   b) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)·10] mW at > 1500 MHz and ≤ 6 GHz

SAR test exclusion table distance is ≤ 50mm

Exposure Position	Wireless Interface	GSM850 (3 Tx slots)	GSM1900 (4 Tx slots)	WCDMA Band V	WCDMA Band IV	WCDMA Band II	Bluetooth	802.11b
	Tune-up Maximum power (dBm)	19.74	15.5	19.00	17.00	15.50	7.00	13.00
Bottom Face	Separation distance(mm)	5					5	
	exclusion threshold	17.3	9.7	14.5	13.2	9.7	1.6	6.3
	Testing required?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**Yes**
Edge 1	Separation distance(mm)	2						
	exclusion threshold	17.3	9.7	14.5	13.2	9.7		
	Testing required?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**		
Edge 2	Separation distance(mm)	47					46	
	exclusion threshold	1.8	1.0	1.6	1.4	1.0	0.2	0.7
	Testing required?	**No**	**No**	**No**	**No**	**No**	**No**	**No**
Edge 3	Separation distance(mm)						3	
	exclusion threshold						1.6	6.3
	Testing required?						**No**	**Yes**
Edge 4	Separation distance(mm)	4					28	
	exclusion threshold	17.3	9.7	14.5	13.2	9.7	0.3	1.1
	Testing required?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**No**

SAR test exclusion table distance is > 50mm

Exposure Position	Wireless Interface	GSM850 (3 Tx slots)	GSM1900 (4 Tx slots)	WCDMA Band V	WCDMA Band IV	WCDMA Band II	Bluetooth	802.11b
	Tune-up Maximum power (dBm)	19.74	15.5	19.00	17.00	15.50	7.00	13.00
	Tune-up Maximum rated power(mW)	94.0	35.0	79.0	50.0	35.0	5.0	20.0
Edge 1	Separation distance(mm)						166	
	exclusion threshold						1255.0	1256.0
	Testing required?						**No**	**No**
Edge 3	Separation distance(mm)	181						
	exclusion threshold	903.0	1419.0	902.0	1423.0	1419.0		
	Testing required?	**No**	**No**	**No**	**No**	**No**		

14. SAR Test Results

General Note:

1. Per KDB 447498 D01v05r02, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
   c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   d. For WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
2. Per KDB 447498 D01v05r02, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
   - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz

GSM Note:

1. Per KDB 447498 D01v05r02, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. Per KDB 941225 D01v03, for Head SAR test reduction for GSM and GPRS modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the EUT was set in GPRS (3Tx slots) for GSM850 and GPRS (4Tx slots) for GSM1900.
3. Per KDB 941225 D01v03, for Body SAR test reduction for GPRS modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the EUT was set in GPRS (3Tx slots) for GSM850 and GPRS (4Tx slots) for GSM1900.

UMTS Note:

1. Per KDB 941225 D01v03, SAR for Head /Body exposure is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03, RMC 12.2kbps setting is used to evaluate SAR. If the maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA.

WLAN Note:

1. Per KDB 248227 D01v02r01, for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
2. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
3. For all positions / configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions / configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.
4. During SAR testing the WLAN transmission was verified using a spectrum analyzer.

14.1 Head SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850	GPRS(3 Tx slots)	Right Cheek	251	848.8	23.29	24.00	1.178	-0.03	0.425	0.500
	GSM850	GPRS(3 Tx slots)	Right Tilted	251	848.8	23.29	24.00	1.178	0.01	0.321	0.378
	GSM850	GPRS(3 Tx slots)	Left Cheek	251	848.8	23.29	24.00	1.178	0.05	0.267	0.314
	GSM850	GPRS(3 Tx slots)	Left Tilted	251	848.8	23.29	24.00	1.178	0.04	0.226	0.266
#01	GSM850	GPRS(3 Tx slots)	Right Cheek	128	824.2	23.15	24.00	1.216	0.08	0.441	0.536
	GSM850	GPRS(3 Tx slots)	Right Cheek	189	836.4	23.19	24.00	1.205	0.03	0.429	0.517
	GSM1900	GPRS(4 Tx slots)	Right Cheek	810	1909.8	18.32	18.50	1.042	0.09	0.679	0.708
	GSM1900	GPRS(4 Tx slots)	Right Tilted	810	1909.8	18.32	18.50	1.042	0.07	0.544	0.567
	GSM1900	GPRS(4 Tx slots)	Left Cheek	810	1909.8	18.32	18.50	1.042	0.06	0.195	0.203
	GSM1900	GPRS(4 Tx slots)	Left Tilted	810	1909.8	18.32	18.50	1.042	-0.09	0.223	0.232
	GSM1900	GPRS(4 Tx slots)	Right Cheek	512	1850.2	17.66	18.50	1.213	0.10	0.555	0.673
#02	GSM1900	GPRS(4 Tx slots)	Right Cheek	661	1880	17.76	18.50	1.186	0.03	0.600	0.711

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
#03	WCDMA Band V	RMC12.2Kbps	Right Cheek	4132	826.4	18.64	19.00	1.086	0.01	0.640	0.695
	WCDMA Band V	RMC12.2Kbps	Right Tilted	4132	826.4	18.64	19.00	1.086	0.04	0.553	0.601
	WCDMA Band V	RMC12.2Kbps	Left Cheek	4132	826.4	18.64	19.00	1.086	0.02	0.519	0.564
	WCDMA Band V	RMC12.2Kbps	Left Tilted	4132	826.4	18.64	19.00	1.086	0.02	0.457	0.496
	WCDMA Band V	RMC12.2Kbps	Right Cheek	4182	836.4	18.46	19.00	1.132	0.02	0.578	0.655
	WCDMA Band V	RMC12.2Kbps	Right Cheek	4233	846.6	18.47	19.00	1.130	0.06	0.582	0.658
	WCDMA Band IV	RMC12.2Kbps	Right Cheek	1312	1712.4	16.34	17.00	1.164	0.08	0.673	0.783
	WCDMA Band IV	RMC12.2Kbps	Right Tilted	1312	1712.4	16.34	17.00	1.164	0.05	0.623	0.725
	WCDMA Band IV	RMC12.2Kbps	Left Cheek	1312	1712.4	16.34	17.00	1.164	0.05	0.193	0.225
	WCDMA Band IV	RMC12.2Kbps	Left Tilted	1312	1712.4	16.34	17.00	1.164	-0.19	0.217	0.253
#04	WCDMA Band IV	RMC12.2Kbps	Right Cheek	1413	1732.6	16.33	17.00	1.167	0.19	0.759	0.886
	WCDMA Band IV	RMC12.2Kbps	Right Cheek	1513	1752.6	16.16	17.00	1.213	0.06	0.716	0.869
#05	WCDMA Band II	RMC12.2Kbps	Right Cheek	9538	1907.6	15.22	15.50	1.067	0.02	0.769	0.820
	WCDMA Band II	RMC12.2Kbps	Right Tilted	9538	1907.6	15.22	15.50	1.067	0.04	0.654	0.698
	WCDMA Band II	RMC12.2Kbps	Left Cheek	9538	1907.6	15.22	15.50	1.067	-0.03	0.215	0.229
	WCDMA Band II	RMC12.2Kbps	Left Tilted	9538	1907.6	15.22	15.50	1.067	-0.04	0.250	0.267
	WCDMA Band II	RMC12.2Kbps	Right Cheek	9262	1852.4	15.02	15.50	1.117	0.06	0.662	0.739
	WCDMA Band II	RMC12.2Kbps	Right Cheek	9400	1880	15.20	15.50	1.072	-0.07	0.720	0.771

<u><WLAN SAR></u>

Plot No.	Band	Mode	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b, 1Mbps	Right Cheek	11	2462	12.75	13.00	1.060	98.25	1.018	-0.07	0.000666	0.001
	WLAN2.4GHz	802.11b, 1Mbps	Right Tilted	11	2462	12.75	13.00	1.060	98.25	1.018	0.06	0.000508	0.001
#06	WLAN2.4GHz	802.11b, 1Mbps	Left Cheek	11	2462	12.75	13.00	1.060	98.25	1.018	0.03	0.020	**0.022**
	WLAN2.4GHz	802.11b, 1Mbps	Left Tilted	11	2462	12.75	13.00	1.060	98.25	1.018	-0.02	0.014	0.015
	WLAN2.4GHz	802.11b, 1Mbps	Left Cheek	1	2412	12.25	13.00	1.189	98.25	1.018	0.01	0.00205	0.002
	WLAN2.4GHz	802.11b, 1Mbps	Left Cheek	6	2437	12.33	13.00	1.167	98.25	1.018	0.01	0.00401	0.005

<u><Bluetooth SAR></u>

Plot No.	Band	Mode	Test Position	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	Bluetooth	1Mbps	Right Cheek	78	2480	6.63	7.00	1.089	0.01	0.00377	0.004
	Bluetooth	1Mbps	Right Tilted	78	2480	6.63	7.00	1.089	-0.01	0.00135	0.001
	Bluetooth	1Mbps	Left Cheek	78	2480	6.63	7.00	1.089	0.04	0.00639	0.007
	Bluetooth	1Mbps	Left Tilted	78	2480	6.63	7.00	1.234	0.06	0.00466	0.006
	Bluetooth	1Mbps	Left Cheek	0	2402	6.09	7.00	1.133	0.08	0.00819	0.009
#07	Bluetooth	1Mbps	Left Cheek	39	2441	6.46	7.00	1.133	-0.09	0.00926	**0.010**

14.2 Body SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
#08	GSM850	GPRS(3 Tx slots)	Bottom Face	0	251	848.8	23.29	24.00	1.178	0.02	0.956	1.126
	GSM850	GPRS(3 Tx slots)	Edge 1	0	251	848.8	23.29	24.00	1.178	-0.02	0.224	0.264
	GSM850	GPRS(3 Tx slots)	Edge 4	0	251	848.8	23.29	24.00	1.178	-0.05	0.235	0.277
	GSM850	GPRS(3 Tx slots)	Bottom Face	0	128	824.2	23.15	24.00	1.216	0.07	0.660	0.803
	GSM850	GPRS(3 Tx slots)	Bottom Face	0	189	836.4	23.19	24.00	1.205	0.05	0.820	0.988
	GSM1900	GPRS(4 Tx slots)	Bottom Face	0	810	1909.8	18.32	18.50	1.042	0.02	1.080	1.126
	GSM1900	GPRS(4 Tx slots)	Edge 1	0	810	1909.8	18.32	18.50	1.042	-0.08	0.450	0.469
	GSM1900	GPRS(4 Tx slots)	Edge 4	0	810	1909.8	18.32	18.50	1.042	-0.08	0.454	0.473
	GSM1900	GPRS(4 Tx slots)	Bottom Face	0	512	1850.2	17.66	18.50	1.213	0.04	0.891	1.081
#09	GSM1900	GPRS(4 Tx slots)	Bottom Face	0	661	1880	17.76	18.50	1.186	0.08	0.990	1.174

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA Band V	RMC12.2Kbps	Bottom Face	0	4132	826.4	18.64	19.00	1.086	0.08	0.738	0.802
	WCDMA Band V	RMC12.2Kbps	Edge 1	0	4132	826.4	18.64	19.00	1.086	0.03	0.388	0.422
	WCDMA Band V	RMC12.2Kbps	Edge 4	0	4132	826.4	18.64	19.00	1.086	0.08	0.140	0.152
#10	WCDMA Band V	RMC12.2Kbps	Bottom Face	0	4182	836.4	18.46	19.00	1.132	0.06	0.927	1.050
	WCDMA Band V	RMC12.2Kbps	Bottom Face	0	4233	846.6	18.47	19.00	1.130	0.07	0.880	0.994
	WCDMA Band IV	RMC12.2Kbps	Bottom Face	0	1312	1712.4	16.34	17.00	1.164	0.01	0.867	1.009
	WCDMA Band IV	RMC12.2Kbps	Edge 1	0	1312	1712.4	16.34	17.00	1.164	0.08	0.497	0.579
	WCDMA Band IV	RMC12.2Kbps	Edge 4	0	1312	1712.4	16.34	17.00	1.164	0.07	0.453	0.527
	WCDMA Band IV	RMC12.2Kbps	Bottom Face	0	1413	1732.6	16.33	17.00	1.167	0.08	0.968	1.129
#11	WCDMA Band IV	RMC12.2Kbps	Bottom Face	0	1513	1752.6	16.16	17.00	1.213	-0.07	0.972	1.179
#12	WCDMA Band II	RMC12.2Kbps	Bottom Face	0	9538	1907.6	15.22	15.50	1.067	0.15	1.110	1.184
	WCDMA Band II	RMC12.2Kbps	Edge 1	0	9538	1907.6	15.22	15.50	1.067	0.02	0.508	0.542
	WCDMA Band II	RMC12.2Kbps	Edge 4	0	9538	1907.6	15.22	15.50	1.067	-0.01	0.578	0.616
	WCDMA Band II	RMC12.2Kbps	Bottom Face	0	9262	1852.4	15.02	15.50	1.117	0.03	0.954	1.065
	WCDMA Band II	RMC12.2Kbps	Bottom Face	0	9400	1880	15.20	15.50	1.072	0.05	1.010	1.082

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
#13	WLAN2.4GHz	802.11b, 1Mbps	Bottom Face	0	11	2462	12.75	13.00	1.060	98.25	1.018	0.01	0.969	**1.046**
	WLAN2.4GHz	802.11b, 1Mbps	Edge 3	0	11	2462	12.75	13.00	1.060	98.25	1.018	-0.02	0.178	0.192
	WLAN2.4GHz	802.11b, 1Mbps	Bottom Face	0	1	2412	12.25	13.00	1.189	98.25	1.018	0.05	0.651	0.788
	WLAN2.4GHz	802.11b, 1Mbps	Bottom Face	0	6	2437	12.33	13.00	1.168	98.25	1.018	0.03	0.792	0.941

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
#14	Bluetooth	1Mbps	Bottom Face	0	78	2480	6.63	7.00	1.089	0.03	0.072	**0.078**
	Bluetooth	1Mbps	Edge 3	0	78	2480	6.63	7.00	1.089	-0.04	0.015	0.016
	Bluetooth	1Mbps	Bottom Face	0	0	2402	6.09	7.00	1.234	0.08	0.035	0.043
	Bluetooth	1Mbps	Bottom Face	0	39	2441	6.46	7.00	1.133	0.01	0.056	0.063

14.3 Repeated SAR Measurement

No.	Band	Mode	Test Position	Gap (mm)	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	GSM850	GPRS (3 Tx slots)	Bottom Face	0	251	848.8	23.29	24.00	1.178	-	-	0.02	0.956	1	1.126
2nd	GSM850	GPRS (3 Tx slots)	Bottom Face	0	251	848.8	23.29	24.00	1.178	-	-	0.13	0.892	1.072	1.050
1st	WCDMA Band IV	RMC12.2Kbps	Bottom Face	0	1513	1752.6	16.16	17.00	1.213	100	1.000	-0.07	0.972	1	1.179
2nd	WCDMA Band IV	RMC12.2Kbps	Bottom Face	0	1513	1752.6	16.16	17.00	1.213	100	1.000	0.07	0.947	1.026	1.149
1st	WCDMA Band II	RMC12.2Kbps	Bottom Face	0	9538	1907.6	15.22	15.50	1.067	100	1.000	0.15	1.110	1	1.184
2nd	WCDMA Band II	RMC12.2Kbps	Bottom Face	0	9538	1907.6	15.22	15.50	1.067	100	1.000	0.04	1.100	1.009	1.173
1st	WLAN2.4GHz	802.11b, 1Mbps	Bottom Face	0	11	2462	12.75	13.00	1.060	98.25	1.018	0.01	0.969	1	1.046
2nd	WLAN2.4GHz	802.11b, 1Mbps	Bottom Face	0	11	2462	12.75	13.00	1.060	98.25	1.018	0.02	0.951	1.019	1.026

General Note:

1. Per KDB 865664 D01v01r03, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.
2. Per KDB 865664 D01v01r03, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR <1.45W/kg, only one repeated measurement is required.
3. The ratio is the difference in percentage between original and repeated *measured SAR*.
4. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

15. Simultaneous Transmission Analysis

No.	Simultaneous Transmission Configurations	Tablet		Note
		Head	Body	
1.	GSM(Voice) + WLAN2.4GHz(data)	Yes		
2.	WCDMA(Voice) + WLAN2.4GHz(data)	Yes		
3.	GSM(Voice) + Bluetooth(data)	Yes		
4.	WCDMA((Voice) + Bluetooth(data)	Yes		
5.	GPRS (Data) + WLAN2.4GHz(data)	Yes	Yes	2.4GHz Hotspot
6.	WCDMA(Data) + WLAN2.4GHz(data)	Yes	Yes	2.4GHz Hotspot
7.	GPRS (Data) + Bluetooth(data)	Yes	Yes	Bluetooth Tethering
8.	WCDMA(Data) + Bluetooth(data)	Yes	Yes	Bluetooth Tethering

General Note:

1. WLAN and Bluetooth share the same antenna, and cannot transmit simultaneously.
2. EUT will choose either GSM or WCDMA according to the network signal condition; therefore, GSM and WCDMA will not operate simultaneously at any moment.
3. The Reported SAR summation is calculated based on the same configuration and test position.
4. Per KDB 447498 D01v05r02, simultaneous transmission SAR is compliant if,
   i) Scalar SAR summation < 1.6W/kg.
   ii) SPLSR = $(SAR_1 + SAR_2)^{1.5}$ / (*min. separation distance, mm*), and the peak separation distance is determined from the square root of $[(x_1-x_2)^2 + (y_1-y_2)^2 + (z_1-z_2)^2]$, where (x_1, y_1, z_1) and (x_2, y_2, z_2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
   iii) If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary.
   iv) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.

15.1 Head Exposure Conditions

<WWAN + WLAN>

WWAN Band		Exposure Position	WWAN 1g SAR (W/kg)	2.4GHz WLAN 1g SAR (W/kg)	Summed 1g SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Right Cheek	0.536	0.001	0.54		
		Right Tilted	0.378	0.001	0.38		
		Left Cheek	0.314	0.022	0.34		
		Left Tilted	0.266	0.015	0.28		
	GSM1900	Right Cheek	0.711	0.001	0.71		
		Right Tilted	0.567	0.001	0.57		
		Left Cheek	0.203	0.022	0.23		
		Left Tilted	0.232	0.015	0.25		
WCDMA	Band V	Right Cheek	0.695	0.001	0.70		
		Right Tilted	0.601	0.001	0.60		
		Left Cheek	0.564	0.022	0.59		
		Left Tilted	0.496	0.015	0.51		
	Band IV	Right Cheek	0.886	0.001	0.89		
		Right Tilted	0.725	0.001	0.73		
		Left Cheek	0.225	0.022	0.25		
		Left Tilted	0.253	0.015	0.27		
	Band II	Right Cheek	0.820	0.001	0.82		
		Right Tilted	0.698	0.001	0.70		
		Left Cheek	0.229	0.022	0.25		
		Left Tilted	0.267	0.015	0.28		

<WWAN + Bluetooth>

WWAN Band		Exposure Position	WWAN 1g SAR (W/kg)	Bluetooth 1g SAR (W/kg)	Summed 1g SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Right Cheek	0.536	0.004	0.54		
		Right Tilted	0.378	0.001	0.38		
		Left Cheek	0.314	0.010	0.32		
		Left Tilted	0.266	0.006	0.27		
	GSM1900	Right Cheek	0.711	0.004	0.72		
		Right Tilted	0.567	0.001	0.57		
		Left Cheek	0.203	0.010	0.21		
		Left Tilted	0.232	0.006	0.24		
WCDMA	Band V	Right Cheek	0.695	0.004	0.70		
		Right Tilted	0.601	0.001	0.60		
		Left Cheek	0.564	0.010	0.57		
		Left Tilted	0.496	0.006	0.50		
	Band IV	Right Cheek	0.886	0.004	0.89		
		Right Tilted	0.725	0.001	0.73		
		Left Cheek	0.225	0.010	0.24		
		Left Tilted	0.253	0.006	0.26		
	Band II	Right Cheek	0.820	0.004	0.82		
		Right Tilted	0.698	0.001	0.70		
		Left Cheek	0.229	0.010	0.24		
		Left Tilted	0.267	0.006	0.27		

15.2 Tablet Body Exposure Conditions

<WWAN + WLAN>

WWAN Band		Exposure Position	WWAN	2.4GHz WLAN	Summed 1g SAR (W/kg)	SPLSR	Case No
			1g SAR (W/kg)	1g SAR (W/kg)			
GSM	GSM850	Bottom Face at 0mm	1.126	1.046	**2.17**	**0.02**	**#01**
		Edge 1 at 0mm	0.264		0.26		
		Edge 3 at 0mm		0.192	0.19		
		Edge 4 at 0mm	0.277		0.28		
	GSM1900	Bottom Face at 0mm	1.174	1.046	**2.22**	**0.02**	**#02**
		Edge 1 at 0mm	0.469		0.47		
		Edge 3 at 0mm		0.192	0.19		
		Edge 4 at 0mm	0.473		0.47		
WCDMA	Band V	Bottom Face at 0mm	1.050	1.046	**2.10**	**0.02**	**#03**
		Edge 1 at 0mm	0.422		0.42		
		Edge 3 at 0mm		0.192	0.19		
		Edge 4 at 0mm	0.152		0.15		
	Band IV	Bottom Face at 0mm	1.179	1.046	**2.23**	**0.02**	**#04**
		Edge 1 at 0mm	0.579		0.58		
		Edge 3 at 0mm		0.192	0.19		
		Edge 4 at 0mm	0.527		0.53		
	Band II	Bottom Face at 0mm	1.184	1.046	**2.23**	**0.02**	**#05**
		Edge 1 at 0mm	0.542		0.54		
		Edge 3 at 0mm		0.192	0.19		
		Edge 4 at 0mm	0.616		0.62		

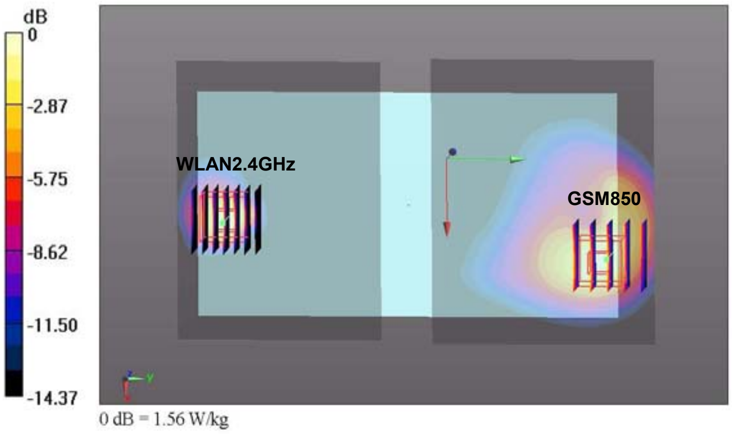
<WWAN + Bluetooth>

WWAN Band		Exposure Position	WWAN 1g SAR (W/kg)	Bluetooth 1g SAR (W/kg)	Summed 1g SAR (W/kg)	SPLSR	Case No
GSM	GSM850	Bottom Face at 0mm	1.126	0.078	1.20		
		Edge 1 at 0mm	0.264		0.26		
		Edge 3 at 0mm		0.016	0.02		
		Edge 4 at 0mm	0.277		0.28		
	GSM1900	Bottom Face at 0mm	1.174	0.078	1.25		
		Edge 1 at 0mm	0.469		0.47		
		Edge 3 at 0mm		0.016	0.02		
		Edge 4 at 0mm	0.473		0.47		
WCDMA	Band V	Bottom Face at 0mm	1.050	0.078	1.13		
		Edge 1 at 0mm	0.422		0.42		
		Edge 3 at 0mm		0.016	0.02		
		Edge 4 at 0mm	0.152		0.15		
	Band IV	Bottom Face at 0mm	1.179	0.078	1.26		
		Edge 1 at 0mm	0.579		0.58		
		Edge 3 at 0mm		0.016	0.02		
		Edge 4 at 0mm	0.527		0.53		
	Band II	Bottom Face at 0mm	1.184	0.078	1.26		
		Edge 1 at 0mm	0.542		0.54		
		Edge 3 at 0mm		0.016	0.02		
		Edge 4 at 0mm	0.616		0.62		

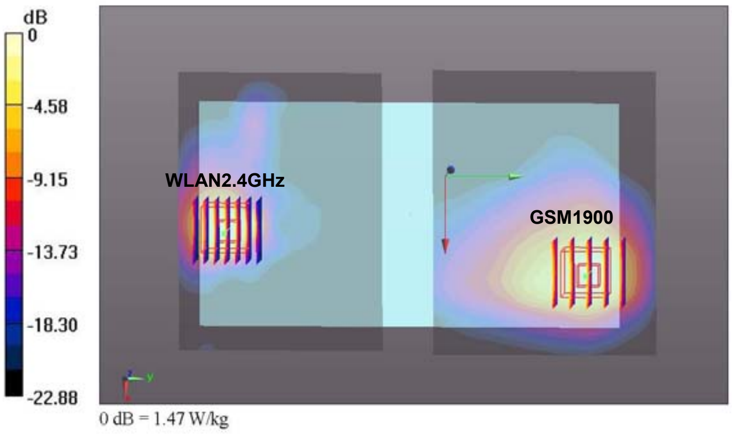
15.3 SPLSR Evaluation and Analysis

General Note:
SPLSR = $(SAR_1 + SAR_2)^{1.5}$ / (*min. separation distance, mm*). If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary

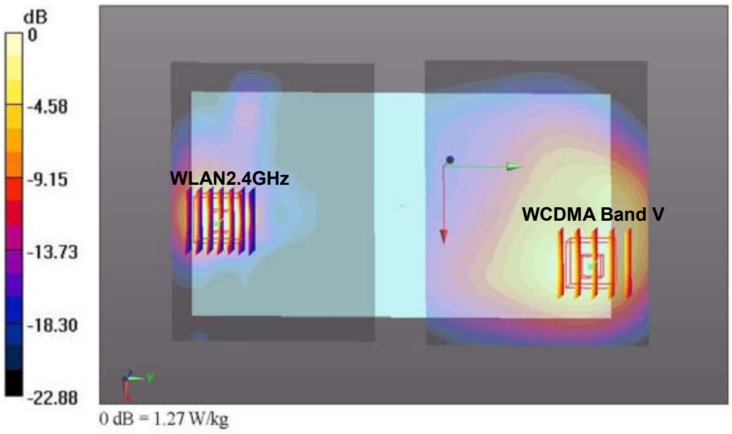
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	SAR peak location (m) Y	SAR peak location (m) Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
#01	GSM850	Bottom Face	1.126	0	0.027	0.0925	-0.182	181.6	2.17	0.02	Not required
	WLAN2.4GHz		1.046	0	0.0108	-0.0884	-0.182				



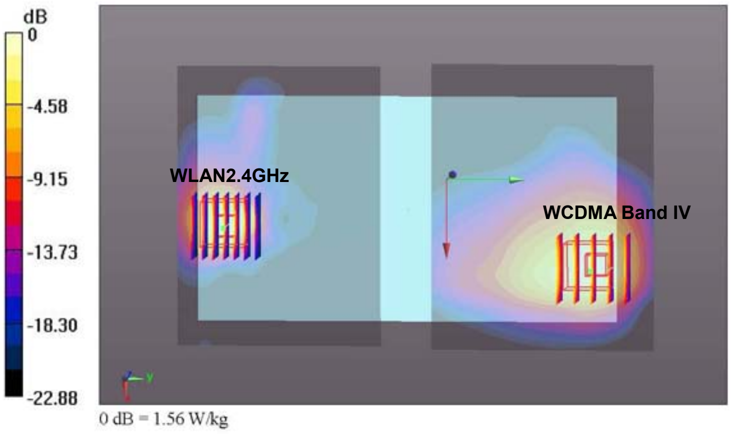
Case	Band	Position	SAR (W/kg)	Gap (cm)	SAR peak location (m) X	SAR peak location (m) Y	SAR peak location (m) Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
#02	GSM1900	Bottom Face	1.174	0	0.03	0.082	-0.181	171.5	2.22	0.02	Not required
	WLAN2.4GHz		1.046	0	0.0108	-0.0884	-0.182				



Case	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(cm)	X	Y	Z				
#03	WCDMA Band V	Bottom Face	1.050	0	0.03	0.088	-0.182	177.4	2.10	0.02	Not required
	WLAN2.4GHz		1.046	0	0.0108	-0.0884	-0.182				



Case	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(cm)	X	Y	Z				
#04	WCDMA Band IV	Bottom Face	1.179	0	0.03	0.093	-0.181	182.4	2.23	0.02	Not required
	WLAN2.4GHz		1.046	0	0.0108	-0.0884	-0.182				



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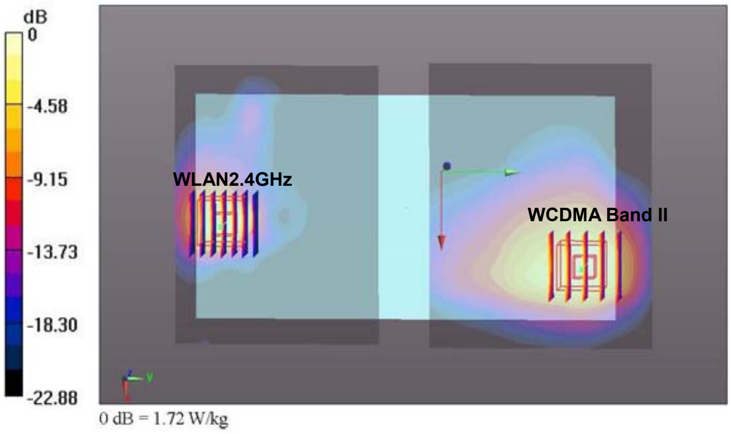
<tr><th rowspan="2">Case</th><th rowspan="2">Band</th><th rowspan="2">Position</th><th rowspan="2">SAR (W/kg)</th><th>Gap</th><th colspan="3">SAR peak location (m)</th><th rowspan="2">3D distance (mm)</th><th rowspan="2">Summed SAR (W/kg)</th><th rowspan="2">SPLSR Results</th><th rowspan="2">Simultaneous SAR</th></tr>
<tr><th>(cm)</th><th>X</th><th>Y</th><th>Z</th></tr>
<tr><td rowspan="3">#05</td><td>WCDMA Band II</td><td rowspan="2">Bottom Face</td><td>1.184</td><td>0</td><td>0.03</td><td>0.082</td><td>-0.181</td><td rowspan="2">171.5</td><td rowspan="2">2.23</td><td rowspan="2">0.02</td><td rowspan="2">Not required</td></tr>
<tr><td>WLAN2.4GHz</td><td>1.046</td><td>0</td><td>0.0108</td><td>-0.0884</td><td>-0.182</td></tr>
<tr><td colspan="11"></td></tr>
</table>

Test Engineer： Luke Lu

16. Uncertainty Assessment

The component of uncertainly may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainly by the statistical analysis of a series of observations is termed a Type An evaluation of uncertainty. The evaluation of uncertainty by means other than the statistical analysis of a series of observation is termed a Type B evaluation of uncertainty. Each component of uncertainty, however evaluated, is represented by an estimated standard deviation, termed standard uncertainty, which is determined by the positive square root of the estimated variance.

A Type A evaluation of standard uncertainty may be based on any valid statistical method for treating data. This includes calculating the standard deviation of the mean of a series of independent observations; using the method of least squares to fit a curve to the data in order to estimate the parameter of the curve and their standard deviations; or carrying out an analysis of variance in order to identify and quantify random effects in certain kinds of measurement.

A type B evaluation of standard uncertainty is typically based on scientific judgment using all of the relevant information available. These may include previous measurement data, experience, and knowledge of the behavior and properties of relevant materials and instruments, manufacture's specification, data provided in calibration reports and uncertainties assigned to reference data taken from handbooks. Broadly speaking, the uncertainty is either obtained from an outdoor source or obtained from an assumed distribution, such as the normal distribution, rectangular or triangular distributions indicated in table below.

Uncertainty Distributions	Normal	Rectangular	Triangular	U-Shape
Multi-plying Factor[a]	1/k[b]	$1/\sqrt{3}$	$1/\sqrt{6}$	$1/\sqrt{2}$

(a) standard uncertainty is determined as the product of the multiplying factor and the estimated range of variations in the measured quantity

(b) κ is the coverage factor

Table 16.1. Standard Uncertainty for Assumed Distribution

The combined standard uncertainty of the measurement result represents the estimated standard deviation of the result. It is obtained by combining the individual standard uncertainties of both Type A and Type B evaluation using the usual "root-sum-squares" (RSS) methods of combining standard deviations by taking the positive square root of the estimated variances.

Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. Typically, the coverage factor ranges from 2 to 3. Using a coverage factor allows the true value of a measured quantity to be specified with a defined probability within the specified uncertainty range. For purpose of this document, a coverage factor two is used, which corresponds to confidence interval of about 95 %. The DASY uncertainty Budget is shown in the following tables.

Error Description	Uncertainty Value (±%)	Probability Distribution	Divisor	Ci (1g)	Ci (10g)	Standard Uncertainty (1g)	Standard Uncertainty (10g)
Measurement System							
Probe Calibration	6.0	Normal	1	1	1	± 6.0 %	± 6.0 %
Axial Isotropy	4.7	Rectangular	√3	0.7	0.7	± 1.9 %	± 1.9 %
Hemispherical Isotropy	9.6	Rectangular	√3	0.7	0.7	± 3.9 %	± 3.9 %
Boundary Effects	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Linearity	4.7	Rectangular	√3	1	1	± 2.7 %	± 2.7 %
System Detection Limits	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Readout Electronics	0.3	Normal	1	1	1	± 0.3 %	± 0.3 %
Response Time	0.8	Rectangular	√3	1	1	± 0.5 %	± 0.5 %
Integration Time	2.6	Rectangular	√3	1	1	± 1.5 %	± 1.5 %
RF Ambient Noise	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
RF Ambient Reflections	3.0	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
Probe Positioner	0.4	Rectangular	√3	1	1	± 0.2 %	± 0.2 %
Probe Positioning	2.9	Rectangular	√3	1	1	± 1.7 %	± 1.7 %
Max. SAR Eval.	1.0	Rectangular	√3	1	1	± 0.6 %	± 0.6 %
Test Sample Related							
Device Positioning	2.9	Normal	1	1	1	± 2.9 %	± 2.9 %
Device Holder	3.6	Normal	1	1	1	± 3.6 %	± 3.6 %
Power Drift	5.0	Rectangular	√3	1	1	± 2.9 %	± 2.9 %
Phantom and Setup							
Phantom Uncertainty	4.0	Rectangular	√3	1	1	± 2.3 %	± 2.3 %
Liquid Conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	± 1.8 %	± 1.2 %
Liquid Conductivity (Meas.)	2.5	Normal	1	0.64	0.43	± 1.6 %	± 1.1 %
Liquid Permittivity (Target)	5.0	Rectangular	√3	0.6	0.49	± 1.7 %	± 1.4 %
Liquid Permittivity (Meas.)	2.5	Normal	1	0.6	0.49	± 1.5 %	± 1.2 %
Combined Standard Uncertainty						± 11.0 %	± 10.8 %
Coverage Factor for 95 %						K=2	
Expanded Uncertainty						**± 22.0 %**	**± 21.5 %**

Table 16.2. Uncertainty Budget for frequency range 300 MHz to 3 GHz

17. References

[1] FCC 47 CFR Part 2 “Frequency Allocations and Radio Treaty Matters; General Rules and Regulations”

[2] ANSI/IEEE Std. C95.1-1992, “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”, September 1992

[3] IEEE Std. 1528-2003, “Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, December 2003

[4] SPEAG DASY System Handbook

[5] FCC KDB 248227 D01 v02r01, “SAR Guidance for IEEE 802.11 (WiFi) Transmitters”, Jun 2015.

[6] FCC KDB 447498 D01 v05r02, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, Feb 2014

[7] FCC KDB 648474 D04 v01r02, “SAR Evaluation Considerations for Wireless Handsets”, Dec 2013.

[8] FCC KDB 941225 D01 v03, “3G SAR MEAUREMENT PROCEDURES”, Oct 2014

[9] FCC KDB 616217 D04 v01r01, “SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers”, May 2013

[10] FCC KDB 865664 D01 v01r03, "SAR Measurement Requirements for 100 MHz to 6 GHz", Feb 2014.

[11] FCC KDB 865664 D02 v01r01, “RF Exposure Compliance Reporting and Documentation Considerations” May 2013.

Appendix A. Plots of System Performance Check

The plots are shown as follows.

System Check_Head_835MHz_150627

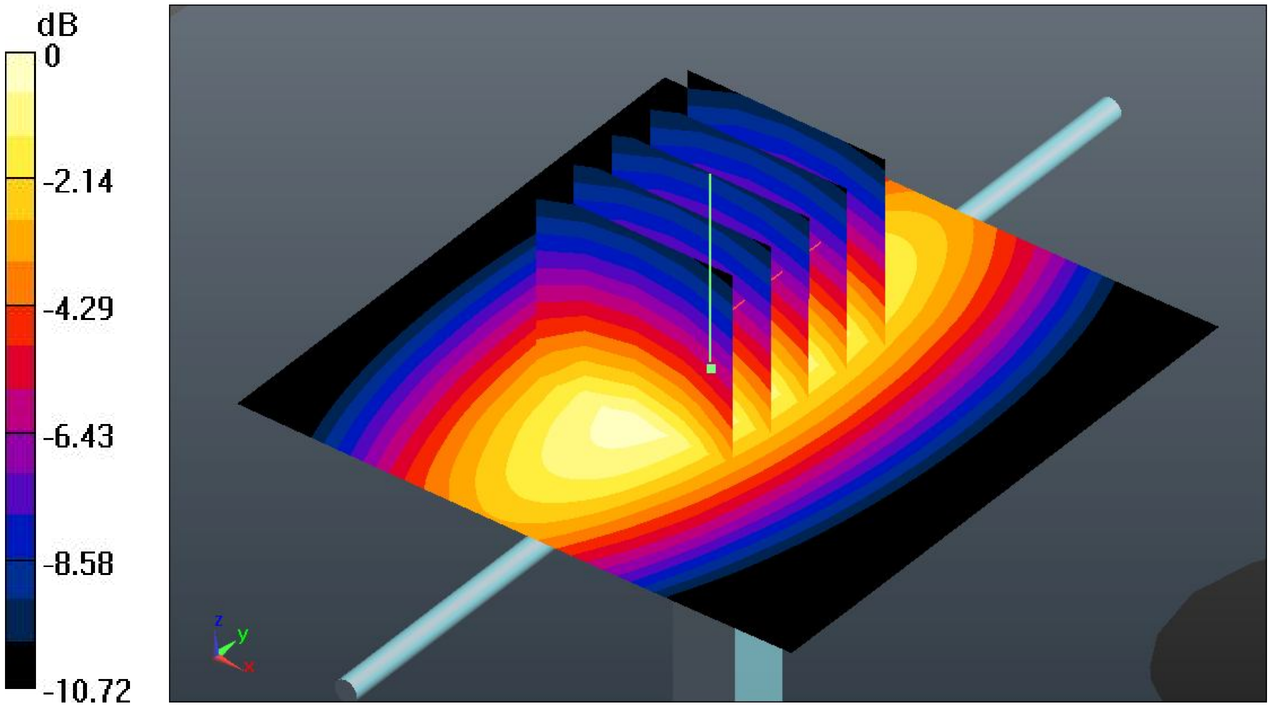
DUT:D835V2-SN:4d091

Communication System: UID 0, CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL_835_150627 Medium parameters used: f = 835 MHz; σ = 0.916 S/m; ε_r = 41.029; ρ = 1000 kg/m^3
Ambient Temperature: 23.3 ℃ ; **Liquid Temperature**: 22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.48, 9.48, 9.48); Calibrated: 2014.11.13;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2014.12.11
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 3.10 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 59.372 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 3.64 W/kg
SAR(1 g) = 2.46 W/kg; SAR(10 g) = 1.61 W/kg
Maximum value of SAR (measured) = 3.11 W/kg



0 dB = 3.10 W/kg

System Check_Head_1750MHz_150627

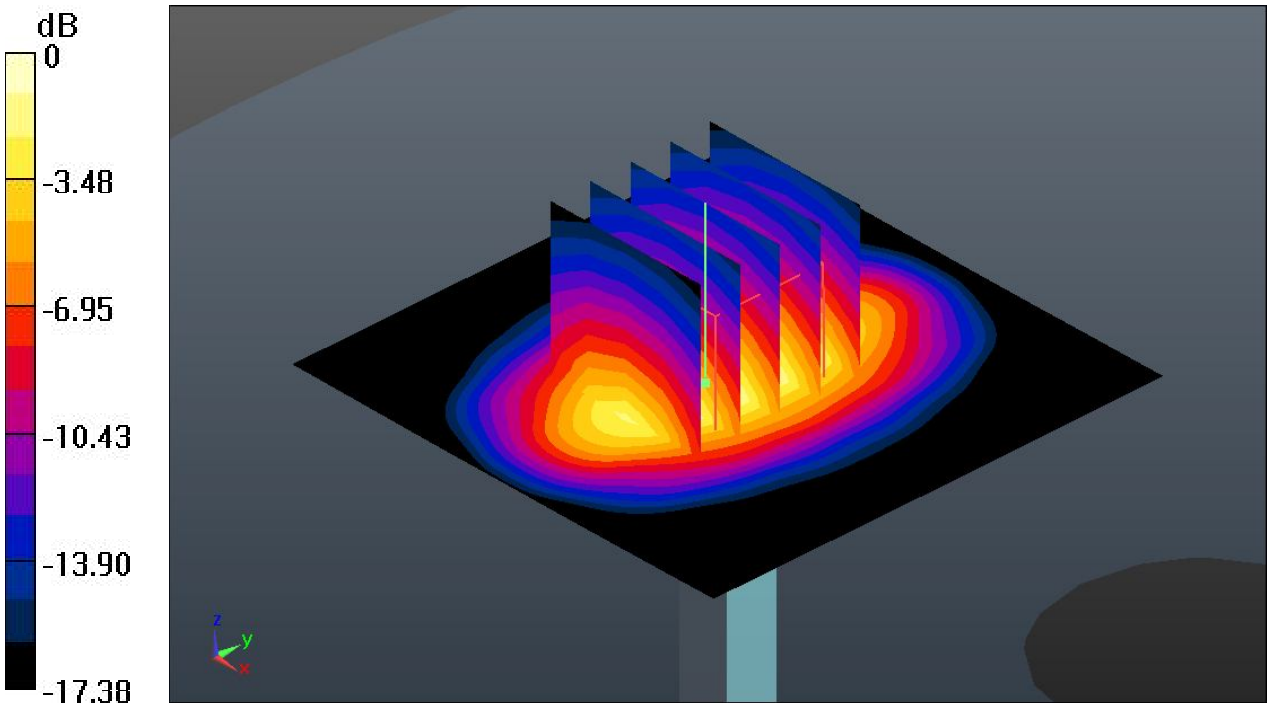
DUT: D1750V2-SN: 1069

Communication System: UID 0, CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: HSL_1800_150627 Medium parameters used: f = 1750 MHz; σ = 1.378 S/m; ε_r = 41.34; ρ = 1000 kg/m^3
Ambient Temperature: 23.5 ℃ ; **Liquid Temperature**: 22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(8.01, 8.01, 8.01); Calibrated: 2014.11.13;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2014.12.11
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 16.2 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 109.1 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 20.3 W/kg
SAR(1 g) = 10.1 W/kg; SAR(10 g) = 6 W/kg
Maximum value of SAR (measured) = 16.0 W/kg



0 dB = 16.2 W/kg

Test Laboratory:Sporton International Inc SAR Testing Lab Date: 2015.06.27

System Check_Head_1900MHz_150627

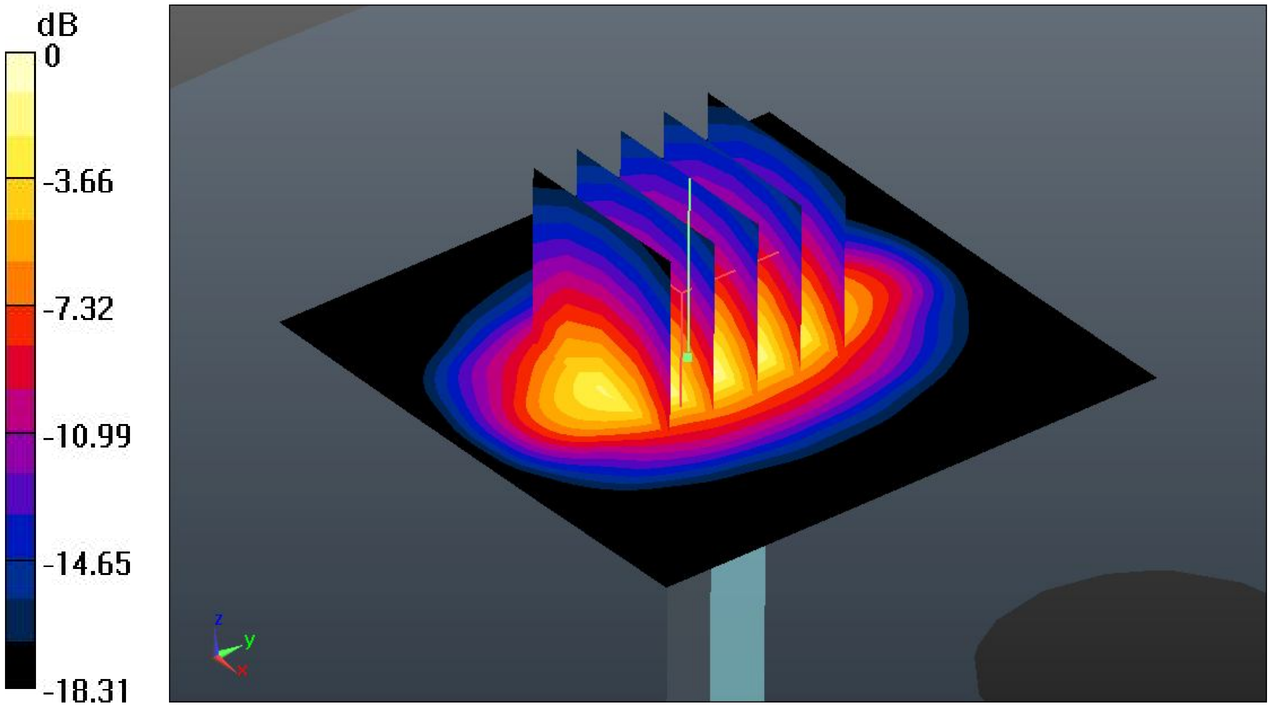
DUT: D1900V2-SN:5d118

Communication System: UID 0, CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900_150627 Medium parameters used: f = 1900 MHz; σ = 1.455 S/m; ε_r = 40.068; ρ = 1000 kg/m^3
Ambient Temperature: 23.5 ℃ ; **Liquid Temperature**: 22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.66, 7.66, 7.66); Calibrated: 2014.11.13;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2014.12.11
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 19.8 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 113.3 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 25.0 W/kg
SAR(1 g) = 10.6 W/kg; SAR(10 g) = 5.04 W/kg
Maximum value of SAR (measured) = 19.7 W/kg



0 dB = 19.8 W/kg

System Check_Head_2450MHz_150628

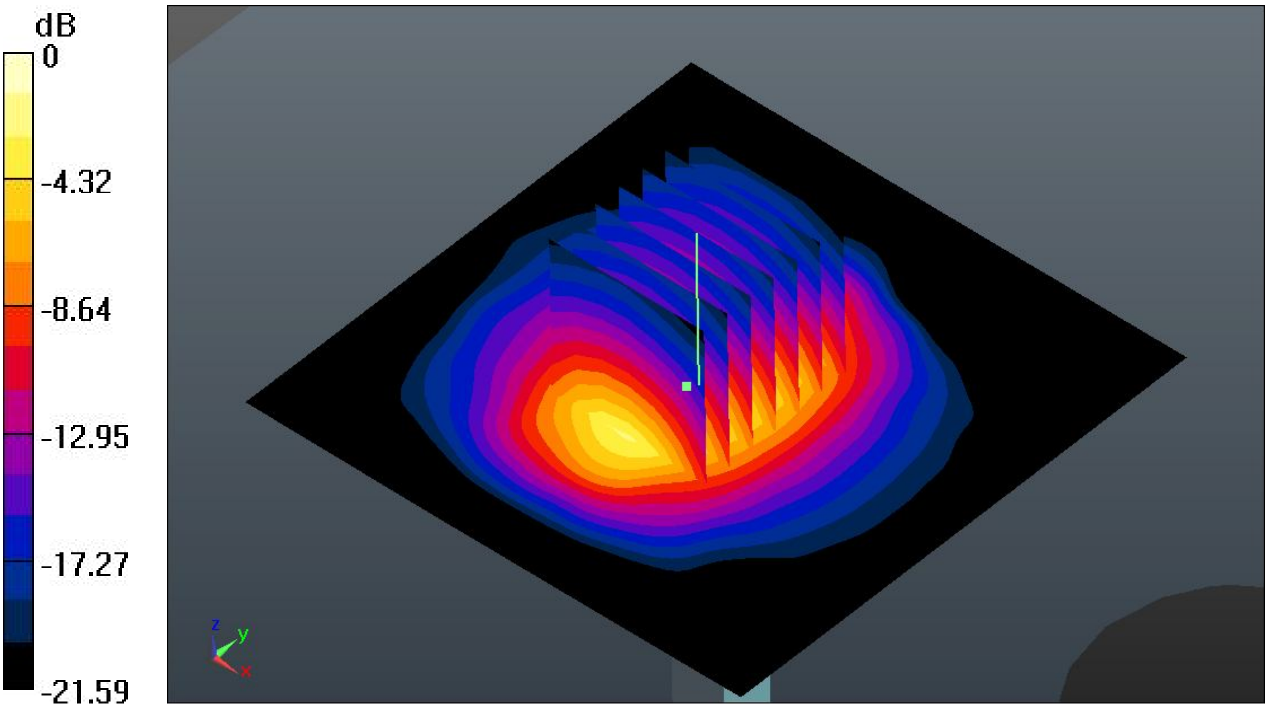
DUT: D2450V2-SN: 840

Communication System: UID 0, CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL_2450_150628 Medium parameters used: f = 2450 MHz; σ = 1.829 S/m; ε_r = 40.081; ρ = 1000 kg/m^3
Ambient Temperature: 23.2 ℃ ; **Liquid Temperature**: 22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.01, 7.01, 7.01); Calibrated: 2014.11.13;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2014.12.11
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

Pin=250mW/Area Scan (81x81x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 20.3 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 89.524 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 27.6 W/kg
SAR(1 g) = 13.2 W/kg; SAR(10 g) = 6.11 W/kg
Maximum value of SAR (measured) = 20.2 W/kg



0 dB = 20.3 W/kg

System Check_Body_835MHz_150625

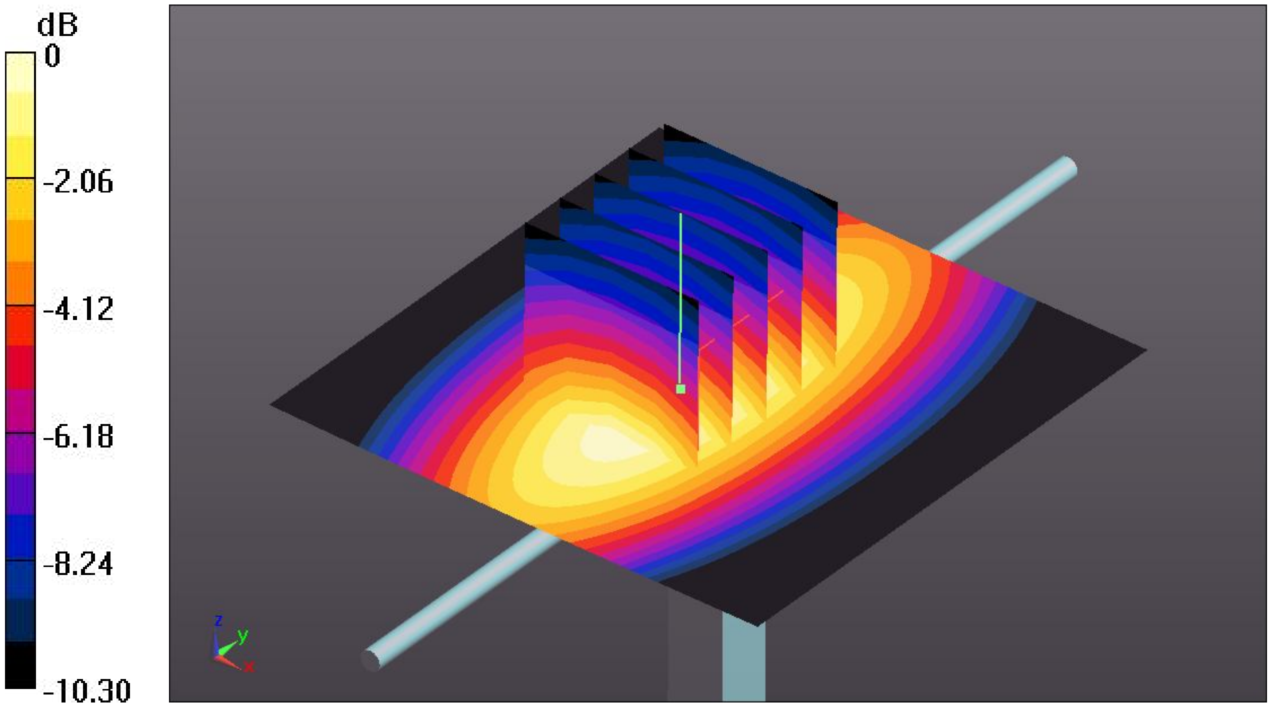
DUT: D835V2-SN:4d091

Communication System: UID 0, CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: MSL_835_150625 Medium parameters used: f = 835 MHz; σ = 0.967 S/m; ε_r = 55.899; ρ = 1000 kg/m^3
Ambient Temperature: 23.4 ℃ ; **Liquid Temperature**: 22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.49, 9.49, 9.49); Calibrated: 2014.11.13;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2014.12.11
- Phantom: SAM3; Type: QDOVA002AA; Serial: TP:1149
- Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.52 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 50.849 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.46 W/kg
SAR(1 g) = 2.34 W/kg; SAR(10 g) = 1.54 W/kg
Maximum value of SAR (measured) = 2.51 W/kg



0 dB = 2.52 W/kg

System Check_Body_1750MHz_150624

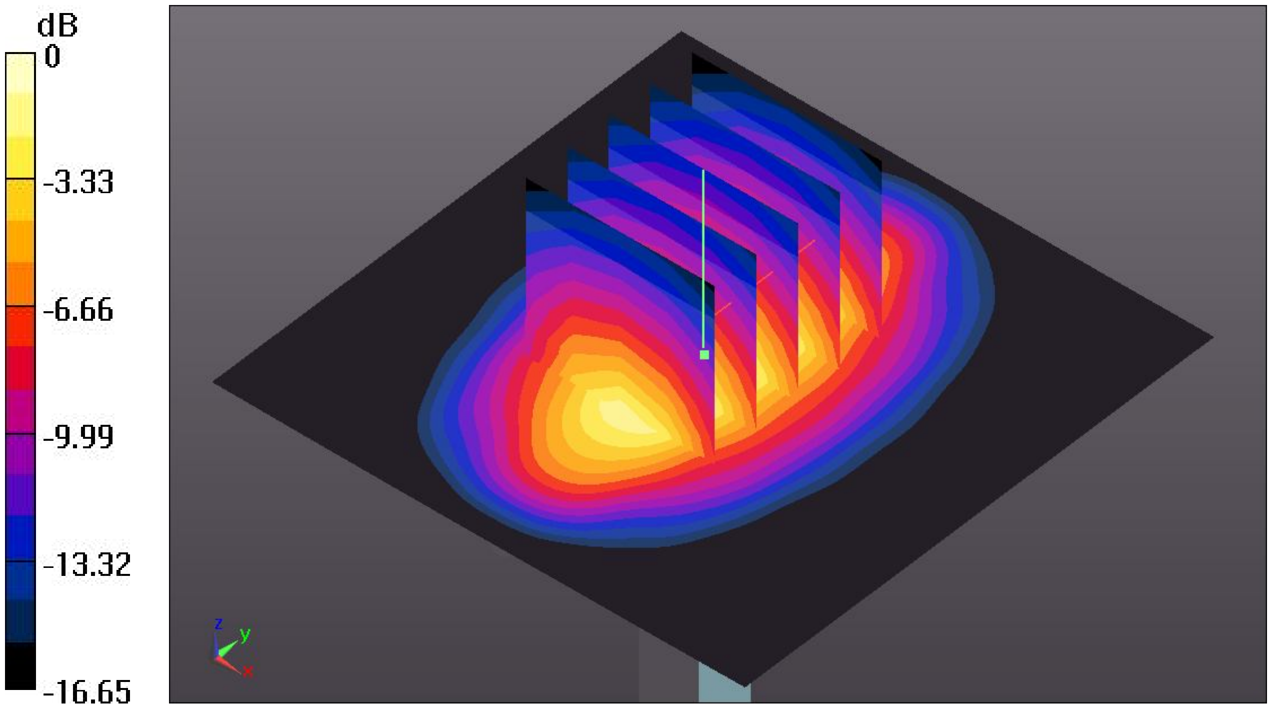
DUT: D1750V2-SN: 1069

Communication System: UID 0, CW; Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: MSL_1800_150624 Medium parameters used: f = 1750 MHz; σ = 1.526 S/m; ε_r = 52.01; ρ = 1000 kg/m^3
Ambient Temperature: 23.3 ℃ ; **Liquid Temperature**: 22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.74, 7.74, 7.74); Calibrated: 2014.11.13;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2014.12.11
- Phantom: SAM3; Type: QDOVA002AA; Serial: TP:1149
- Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 14.5 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 98.496 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 18.1 W/kg
SAR(1 g) = 10.3 W/kg; SAR(10 g) = 5.52 W/kg
Maximum value of SAR (measured) = 14.4 W/kg



0 dB = 14.4 W/kg

System Check_Body_1900MHz_150626

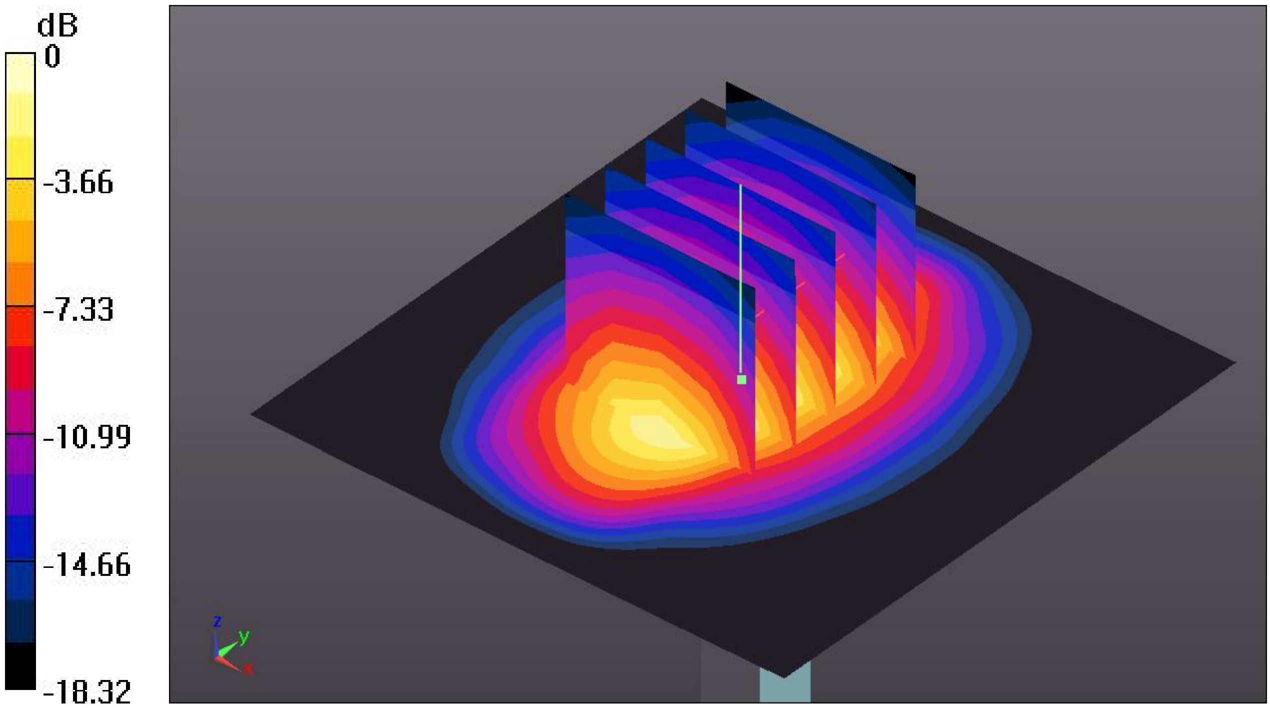
DUT: D1900V2-SN:5d118

Communication System: UID 0, CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: MSL_1900_150626 Medium parameters used: f = 1900 MHz; σ = 1.542 S/m; ε_r = 53.532; ρ = 1000 kg/m^3
Ambient Temperature: 23.3 ℃ ; **Liquid Temperature**: 22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.39, 7.39, 7.39); Calibrated: 2014.11.13;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2014.12.11
- Phantom: SAM3; Type: QDOVA002AA; Serial: TP:1149
- Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 15.5 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 88.378 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 19.7 W/kg
SAR(1 g) = 10.9 W/kg; SAR(10 g) = 5.64 W/kg
Maximum value of SAR (measured) = 15.6 W/kg



0 dB = 15.5 W/kg

System Check_Body_2450MHz_150628

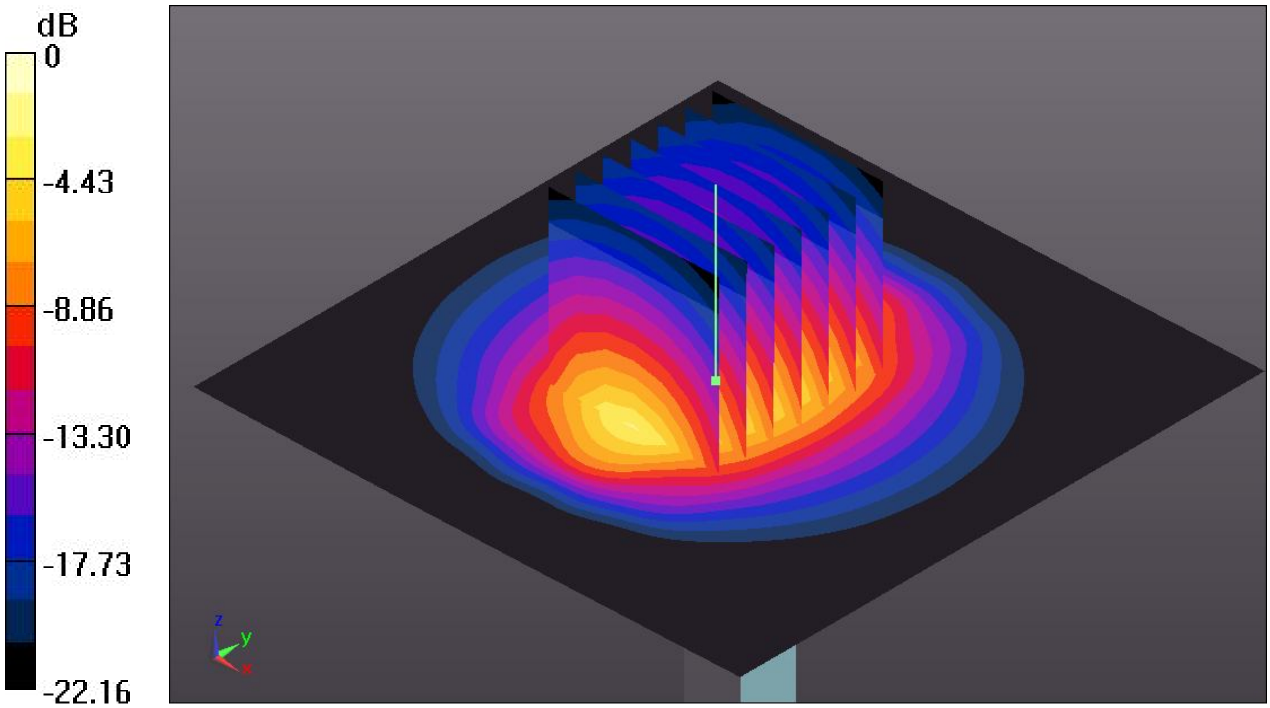
DUT: D2450V2-SN: 840

Communication System: UID 0, CW; Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: MSL_2450_15028 Medium parameters used: f = 2450 MHz; σ = 1.992 S/m; ε_r = 52.302; ρ = 1000 kg/m^3
Ambient Temperature: 23.4 ℃ ; **Liquid Temperature**: 22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(6.95, 6.95, 6.95); Calibrated: 2014.11.13;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2014.12.11
- Phantom: SAM3; Type: QDOVA002AA; Serial: TP:1149
- Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

Pin=250mW/Area Scan (81x81x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 22.4 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 90.087 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 30.4 W/kg
SAR(1 g) = 13.6 W/kg; SAR(10 g) = 6571 W/kg
Maximum value of SAR (measured) = 22.4 W/kg



0 dB = 22.4 W/kg

Appendix B. Plots of High SAR Measurement

The plots are shown as follows.

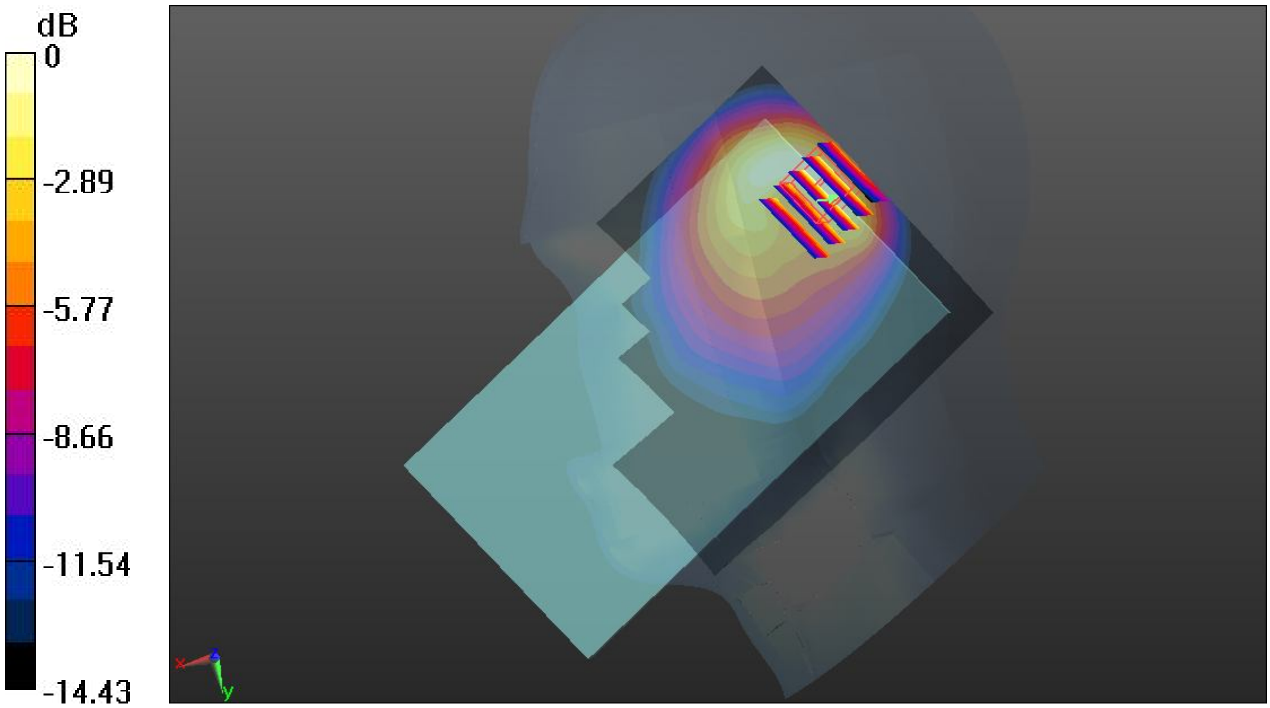
#01_GSM850_GPRS(3 Tx slots)_Right Cheek_Ch128

Communication System: UID 0, GPRS/EDGE11 (0); Frequency: 824.2 MHz;Duty Cycle: 1:2.77
Medium: HSL_835_150627 Medium parameters used: f = 824.2 MHz; σ = 0.906 S/m; ε_r = 41.145; ρ = 1000 kg/m^3
Ambient Temperature: 23.3 ℃ ; **Liquid Temperature**: 22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.48, 9.48, 9.48); Calibrated: 2014.11.13;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2014.12.11
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

Ch128/Area Scan (91x151x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.673 W/kg

Ch128/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.301 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.908 W/kg
SAR(1 g) = 0.441 W/kg; SAR(10 g) = 0.241 W/kg
Maximum value of SAR (measured) = 0.659 W/kg



0 dB = 0.673 W/kg

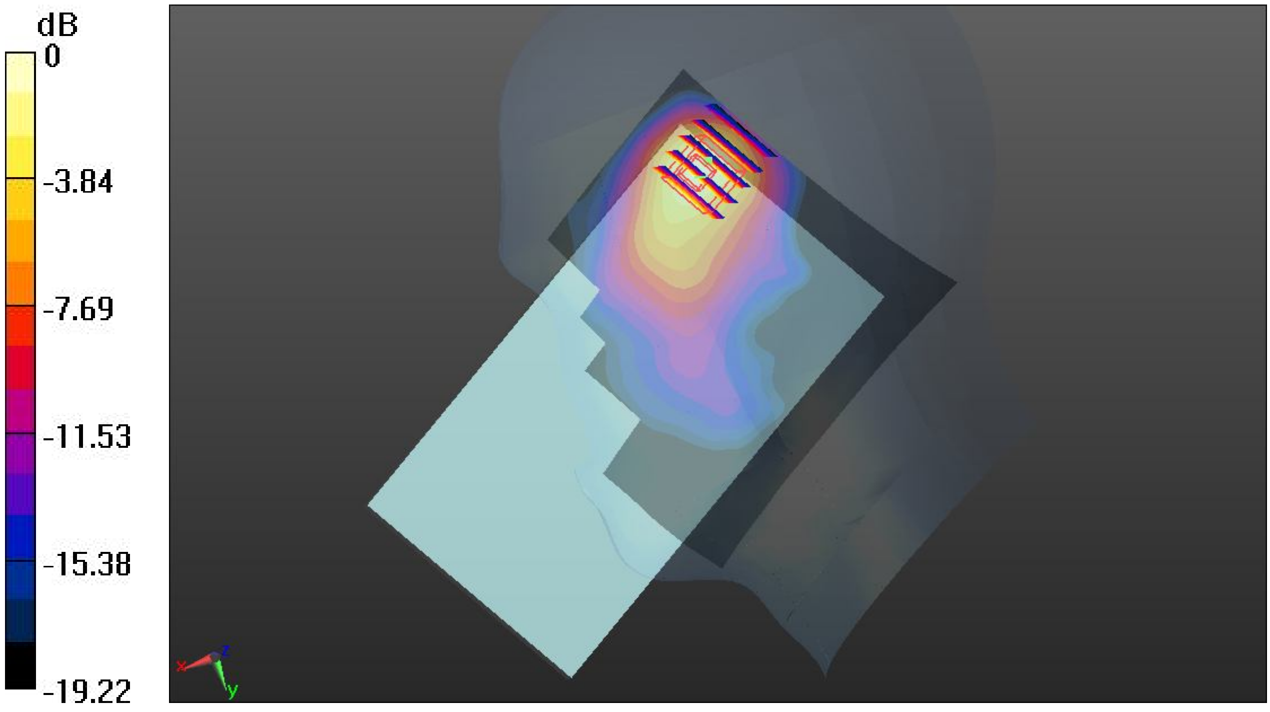
#02_GSM1900_GPRS(4 Tx slots)_Right Cheek_Ch661

Communication System: UID 0, GPRS/EDGE12 (0); Frequency: 1880 MHz;Duty Cycle: 1:2.08
Medium: HSL_1900_150627 Medium parameters used: f = 1880 MHz; σ = 1.435 S/m; ε_r = 40.161; ρ = 1000 kg/m^3
Ambient Temperature: 23.5 ℃ ; **Liquid Temperature**: 22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.66, 7.66, 7.66); Calibrated: 2014.11.13;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2014.12.11
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

Ch661/Area Scan (91x151x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.03 W/kg

Ch661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.669 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.18 W/kg
SAR(1 g) = 0.600 W/kg; SAR(10 g) = 0.319 W/kg
Maximum value of SAR (measured) = 0.836 W/kg



0 dB = 1.03 W/kg

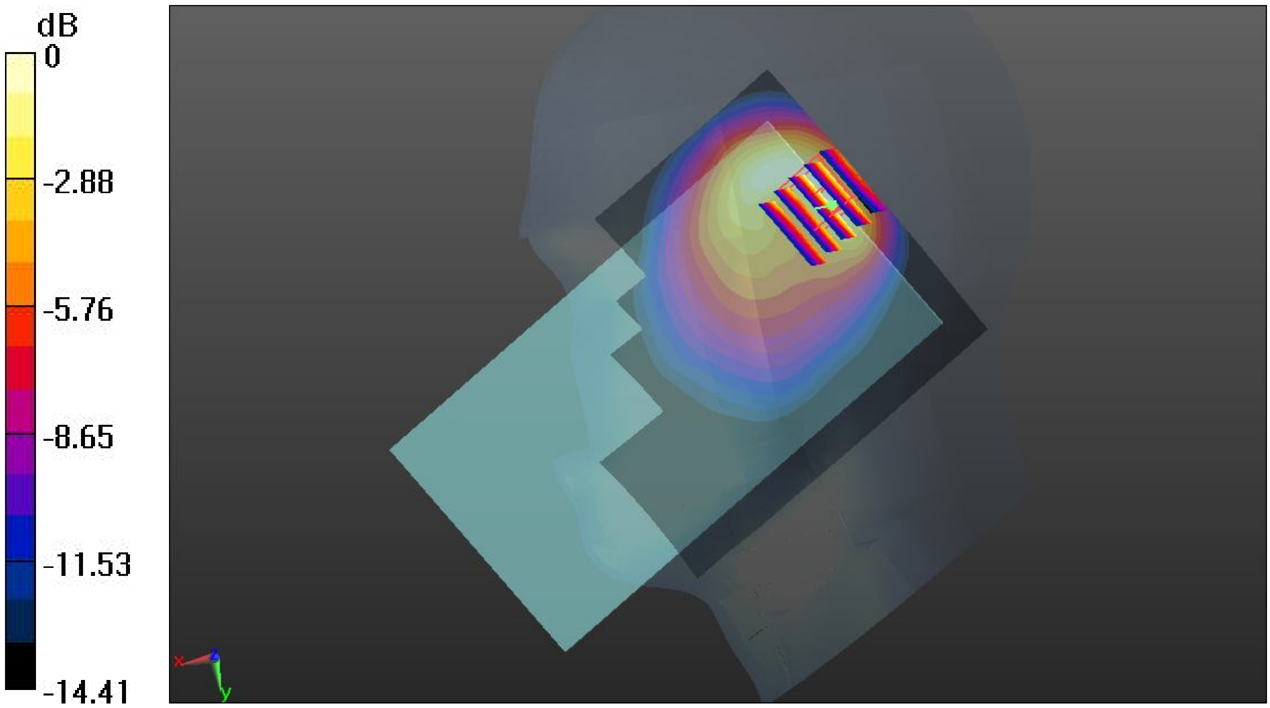
#03_WCDMA Band V_RMC 12.2Kbps_Right Cheek_Ch4132

Communication System: UID 0, UMTS (0); Frequency: 826.4 MHz;Duty Cycle: 1:1
Medium: HSL_835_150627 Medium parameters used: f = 826.4 MHz; σ = 0.908 S/m; ε_r = 41.122; ρ = 1000 kg/m^3
Ambient Temperature: 23.3 ℃ ; **Liquid Temperature**: 22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.48, 9.48, 9.48); Calibrated: 2014.11.13;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2014.12.11
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

Ch4132/Area Scan (91x151x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.997 W/kg

Ch4132/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.261 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.33 W/kg
SAR(1 g) = 0.640 W/kg; SAR(10 g) = 0.350 W/kg
Maximum value of SAR (measured) = 0.987 W/kg



0 dB = 0.997 W/kg

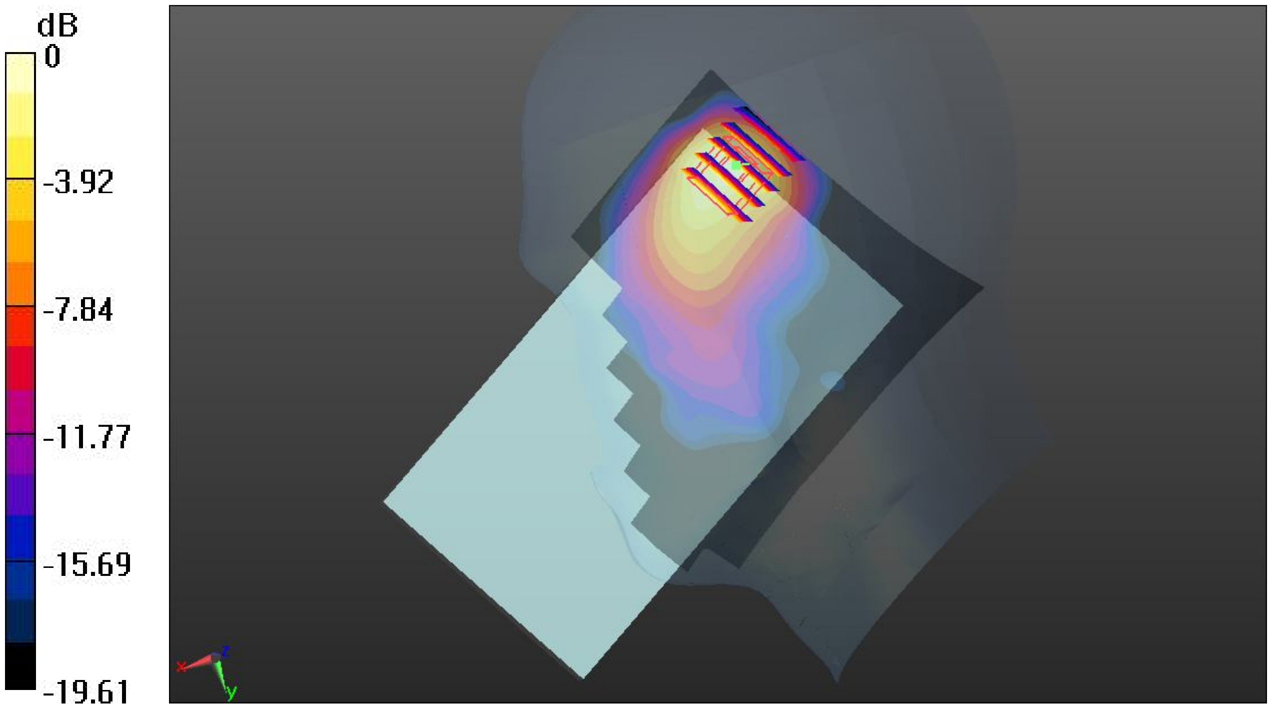
#04_WCDMA Band IV_RMC 12.2Kbps_Right Cheek_Ch1413

Communication System: UID 0, UMTS (0); Frequency: 1732.6 MHz;Duty Cycle: 1:1
Medium: HSL_1800_150627 Medium parameters used: f = 1732.6 MHz; σ = 1.361 S/m; ε_r = 41.422; ρ = 1000 kg/m^3
Ambient Temperature: 23.5 ℃ ; **Liquid Temperature**: 22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(8.01, 8.01, 8.01); Calibrated: 2014.11.13;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2014.12.11
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

Ch1413/Area Scan (91x151x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.27 W/kg

Ch1413/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.145 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 1.59 W/kg
SAR(1 g) = 0.759 W/kg; SAR(10 g) = 0.409 W/kg
Maximum value of SAR (measured) = 1.14 W/kg



0 dB = 1.27 W/kg

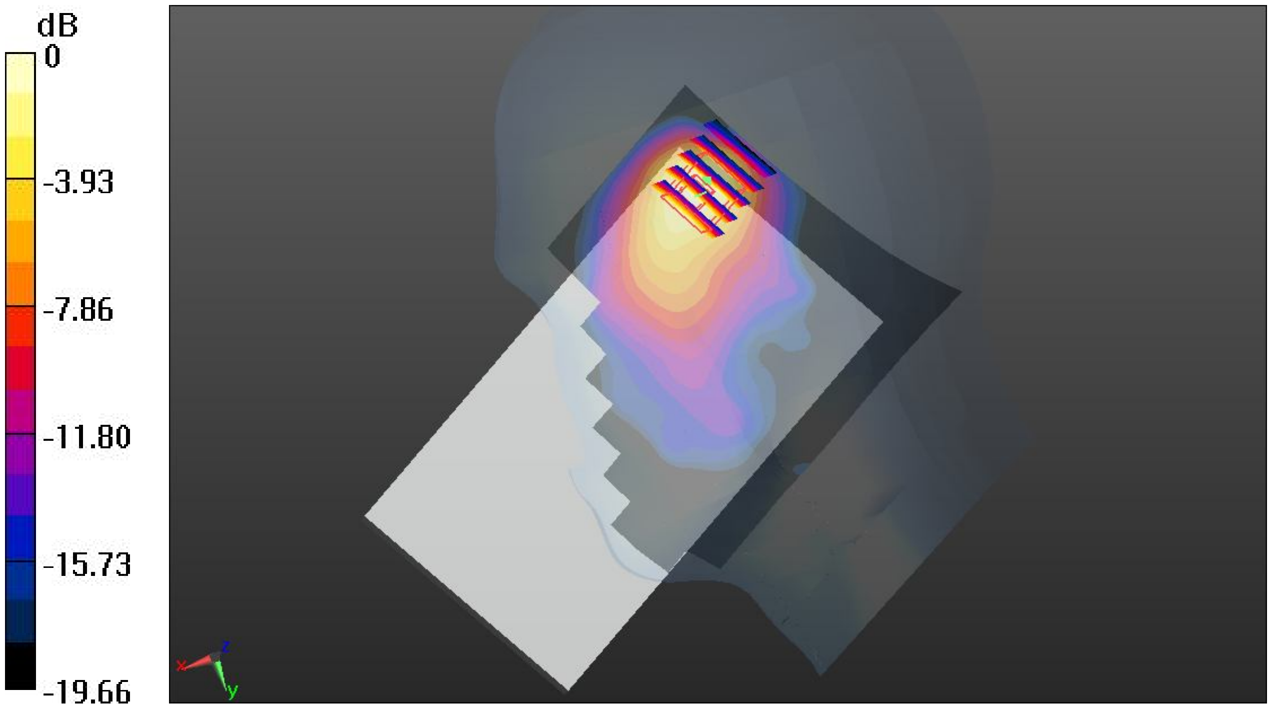
#05_WCDMA Band II_RMC 12.2Kbps_Right Cheek_Ch9538

Communication System: UID 0, UMTS (0); Frequency: 1907.6 MHz;Duty Cycle: 1:1
Medium: HSL_1900_150627 Medium parameters used: f = 1907.6 MHz; σ = 1.463 S/m; ε_r = 40.033; ρ = 1000 kg/m^3
Ambient Temperature: 23.5 ℃ ; **Liquid Temperature**: 22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.66, 7.66, 7.66); Calibrated: 2014.11.13;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2014.12.11
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

Ch9538/Area Scan (91x151x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.18 W/kg

Ch9538/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.170 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.59 W/kg
SAR(1 g) = 0.769 W/kg; SAR(10 g) = 0.397 W/kg
Maximum value of SAR (measured) = 1.08 W/kg



0 dB = 1.18 W/kg

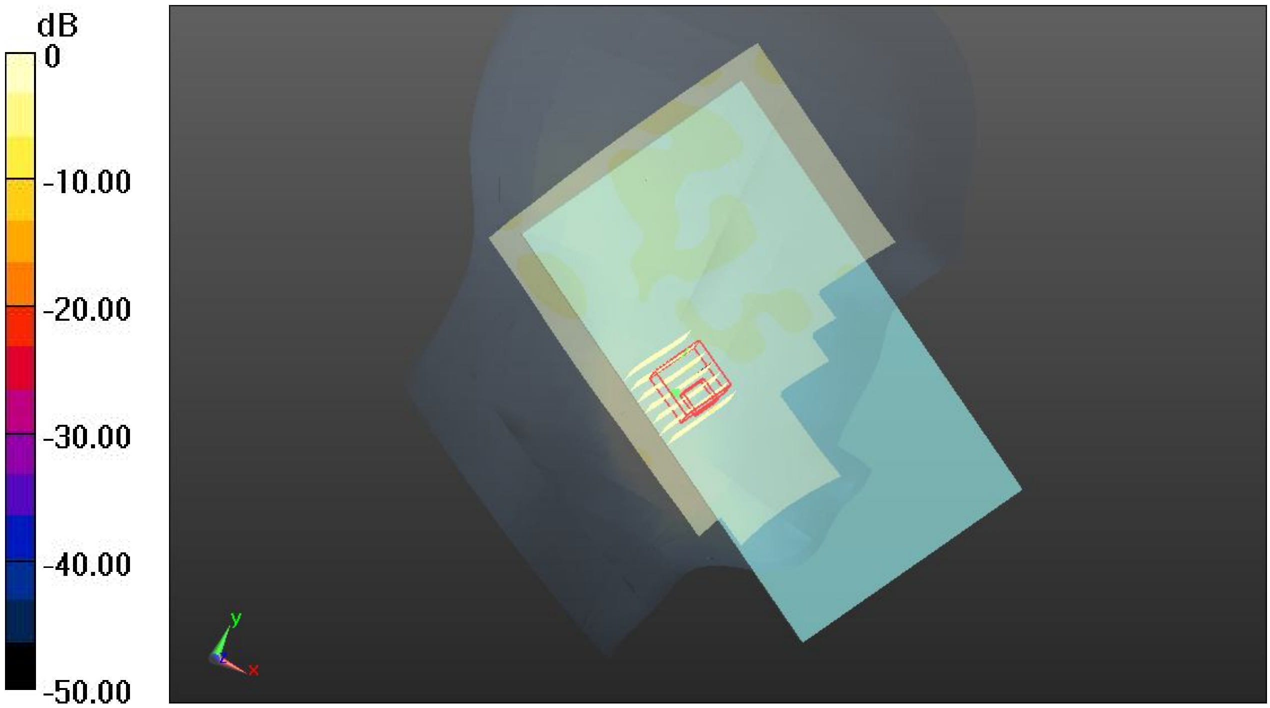
#06_WLAN2.4GHz_802.11b 1Mbps_Left Cheek_Ch11

Communication System: UID 0, WIFI (0); Frequency: 2462 MHz;Duty Cycle: 1:1.018
Medium: HSL_2450_150628 Medium parameters used: f = 2462 MHz; σ = 1.842 S/m; ε_r = 40.039; ρ = 1000 kg/m^3
Ambient Temperature: 23.2 ℃ ; **Liquid Temperature**: 22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.01, 7.01, 7.01); Calibrated: 2014.11.13;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2014.12.11
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

Ch11/Area Scan (111x181x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.0332 W/kg

Ch11/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.807 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.419 W/kg
SAR(1 g) = 0.020 W/kg; SAR(10 g) = 0.00476 W/kg
Maximum value of SAR (measured) = 0.369 W/kg



0 dB = 0.0332 W/kg

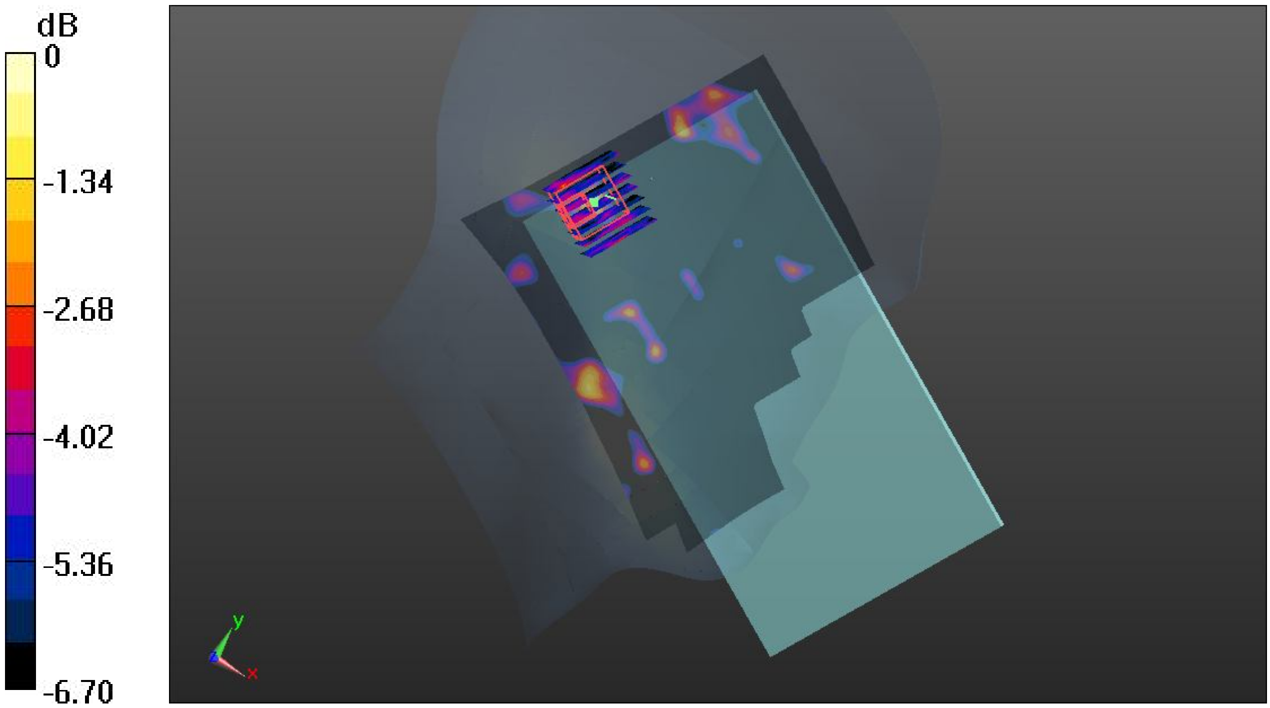
#07_Bluetooth_1Mbps_Left Cheek_Ch39

Communication System: UID 0, Bluetooth (0); Frequency: 2441 MHz;Duty Cycle: 1:1.2
Medium: HSL_2450_150628 Medium parameters used: f = 2441 MHz; σ = 1.819 S/m; ε_r = 40.112; ρ = 1000 kg/m^3
Ambient Temperature: 23.2 ℃ ; **Liquid Temperature**: 22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.01, 7.01, 7.01); Calibrated: 2014.11.13;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2014.12.11
- Phantom: SAM2; Type: QD000P40CD; Serial: TP:1671
- Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

Ch39/Area Scan (111x181x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.0235 W/kg

Ch39/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.882 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 0.0130 W/kg
SAR(1 g) = 0.00926 W/kg; SAR(10 g) = 0.00786 W/kg
Maximum value of SAR (measured) = 0.0135 W/kg



0 dB = 0.0235 W/kg

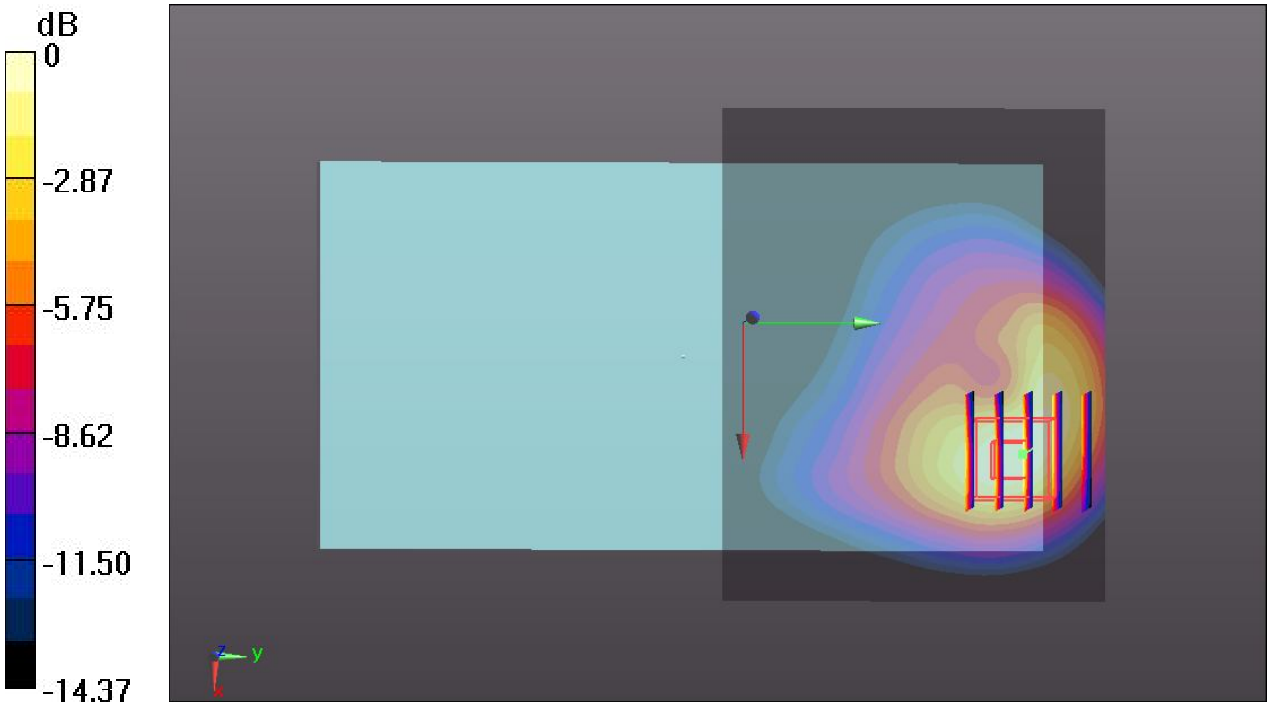
#08_GSM850_GPRS(3 Tx slots)_Bottom Face_0mm_Ch251

Communication System: UID 0, GPRS/EDGE11 (0); Frequency: 848.8 MHz;Duty Cycle: 1:2.77
Medium: MSL_835_150625 Medium parameters used: f = 848.8 MHz; σ = 0.985 S/m; ε_r = 55.763; ρ = 1000 kg/m^3
Ambient Temperature: 23.3 ℃ ; **Liquid Temperature**: 22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.49, 9.49, 9.49); Calibrated: 2014.11.13;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2014.12.11
- Phantom: SAM3; Type: QDOVA002AA; Serial: TP:1149
- Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

Ch251/Area Scan (91x71x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.34 W/kg

Ch251/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.750 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.67 W/kg
SAR(1 g) = 0.956 W/kg; SAR(10 g) = 0.539 W/kg
Maximum value of SAR (measured) = 1.28 W/kg



0 dB = 1.34 W/kg

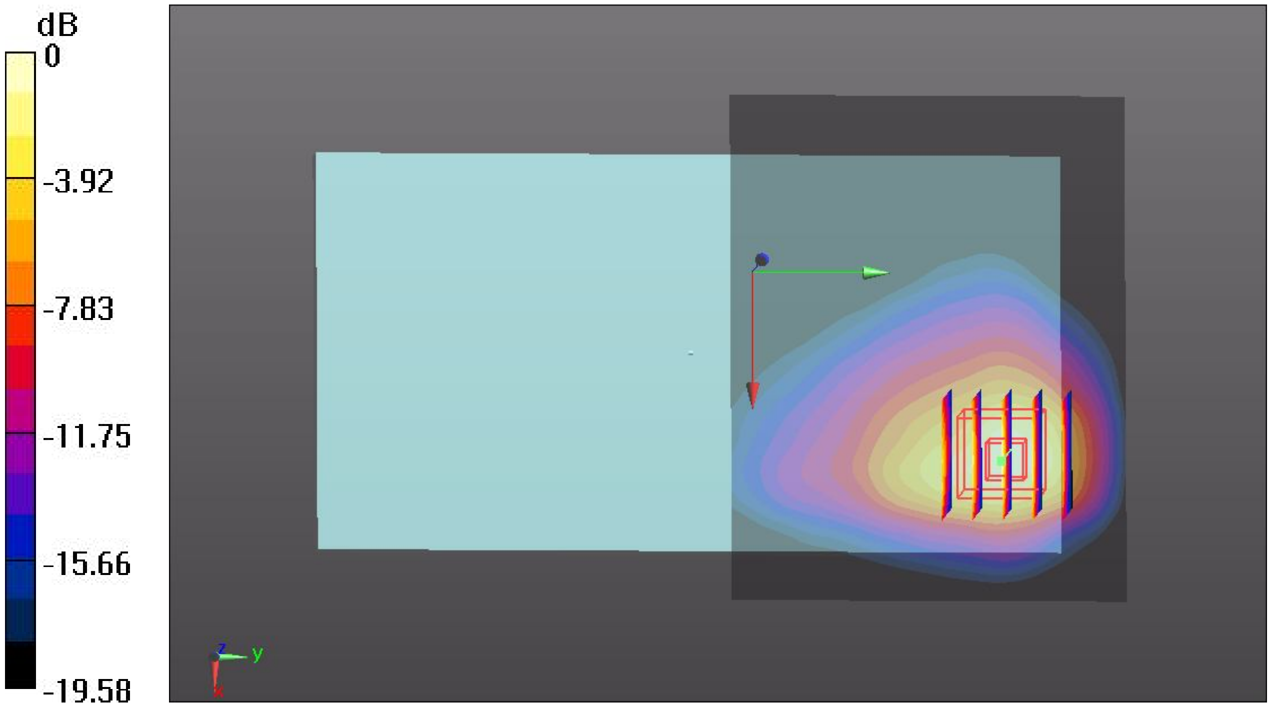
#09_GSM1900_GPRS(4 Tx slots)_Bottom Face_0mm_Ch661

Communication System: UID 0, GPRS/EDGE12 (0); Frequency: 1880 MHz;Duty Cycle: 1:2.08
Medium: MSL_1900_150626 Medium parameters used: f = 1880 MHz; σ = 1.517 S/m; ε_r = 53.569; ρ = 1000 kg/m^3
Ambient Temperature: 23.3 ℃ ; **Liquid Temperature**: 22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.39, 7.39, 7.39); Calibrated: 2014.11.13;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2014.12.11
- Phantom: SAM3; Type: QDOVA002AA; Serial: TP:1149
- Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

Ch661/Area Scan (91x71x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.47 W/kg

Ch661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.937 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 2.02 W/kg
SAR(1 g) = 0.990 W/kg; SAR(10 g) = 0.497 W/kg
Maximum value of SAR (measured) = 1.47 W/kg



0 dB = 1.47 W/kg

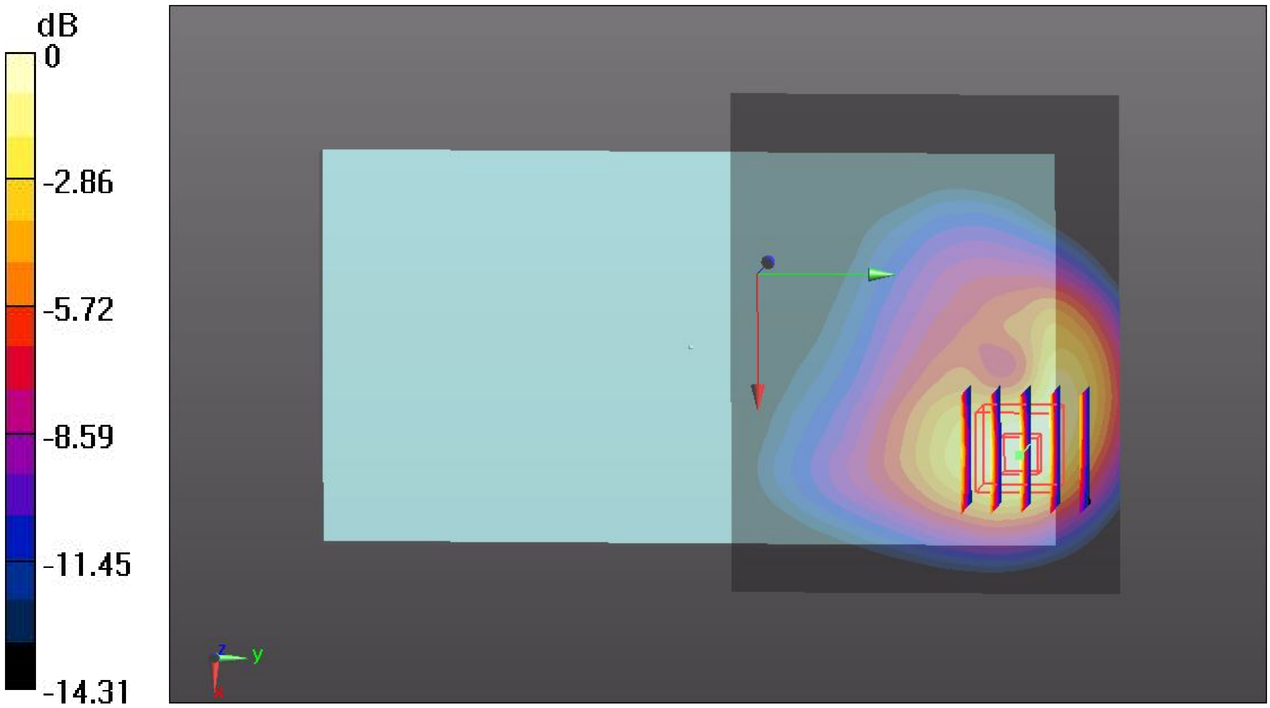
#10_WCDMA Band V_RMC 12.2Kbps_Bottom Face_0mm_Ch4182

Communication System: UID 0, UMTS (0); Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: MSL_835_150625 Medium parameters used: f = 836.4 MHz; σ = 0.969 S/m; ε_r = 55.886; ρ = 1000 kg/m^3
Ambient Temperature: 23.4 ℃ ; **Liquid Temperature**: 22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(9.49, 9.49, 9.49); Calibrated: 2014.11.13;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2014.12.11
- Phantom: SAM3; Type: QDOVA002AA; Serial: TP:1149
- Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

Ch4182/Area Scan (91x71x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.27 W/kg

Ch4182/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.900 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 1.61 W/kg
SAR(1 g) = 0.927 W/kg; SAR(10 g) = 0.529 W/kg
Maximum value of SAR (measured) = 1.27 W/kg



0 dB = 1.27 W/kg

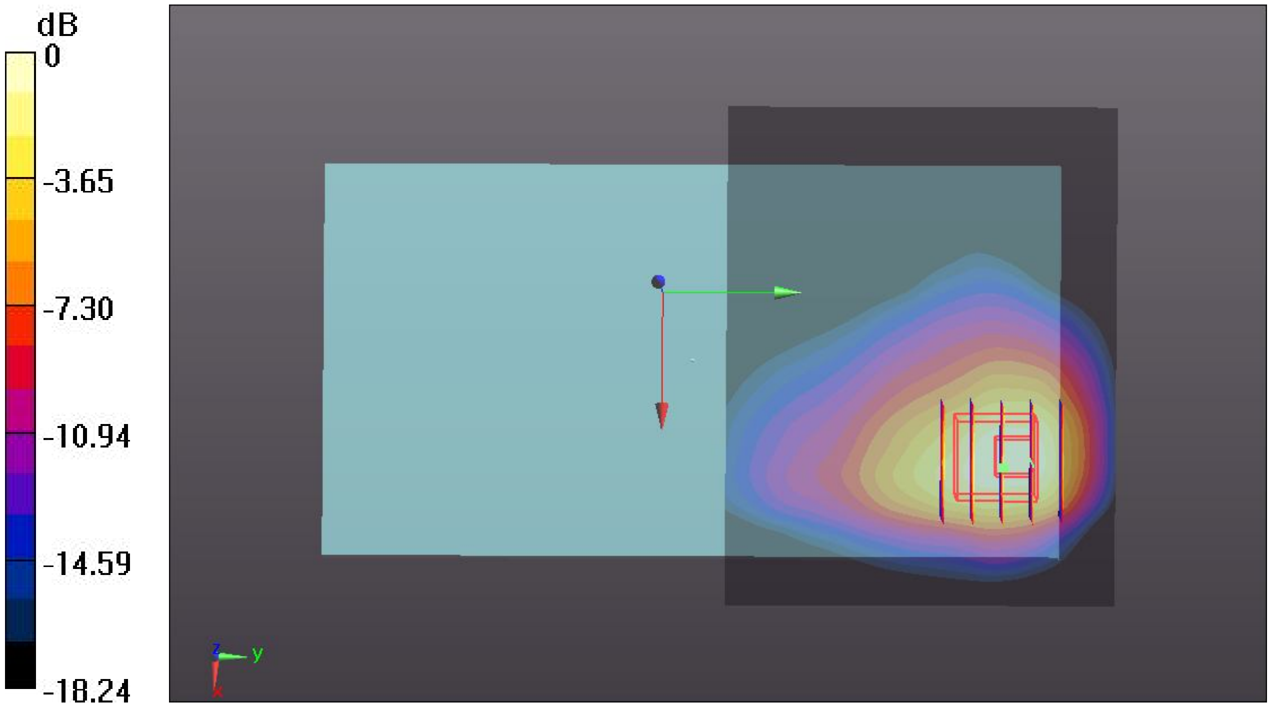
#11_WCDMA Band IV_RMC 12.2Kbps_Bottom Face_0mm_Ch1513

Communication System: UID 0, UMTS (0); Frequency: 1752.6 MHz;Duty Cycle: 1:1
Medium: MSL_1800_150624 Medium parameters used: f = 1752.6 MHz; σ = 1.53 S/m; ε_r = 52.002; ρ = 1000 kg/m^3
Ambient Temperature: 23.3 ℃ ; **Liquid Temperature**: 22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.74, 7.74, 7.74); Calibrated: 2014.11.13;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2014.12.11
- Phantom: SAM3; Type: QDOVA002AA; Serial: TP:1149
- Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

Ch1513/Area Scan (91x71x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.42 W/kg

Ch1513/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.208 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 1.97 W/kg
SAR(1 g) = 0.972 W/kg; SAR(10 g) = 0.544 W/kg
Maximum value of SAR (measured) = 1.36 W/kg



0 dB = 1.42 W/kg

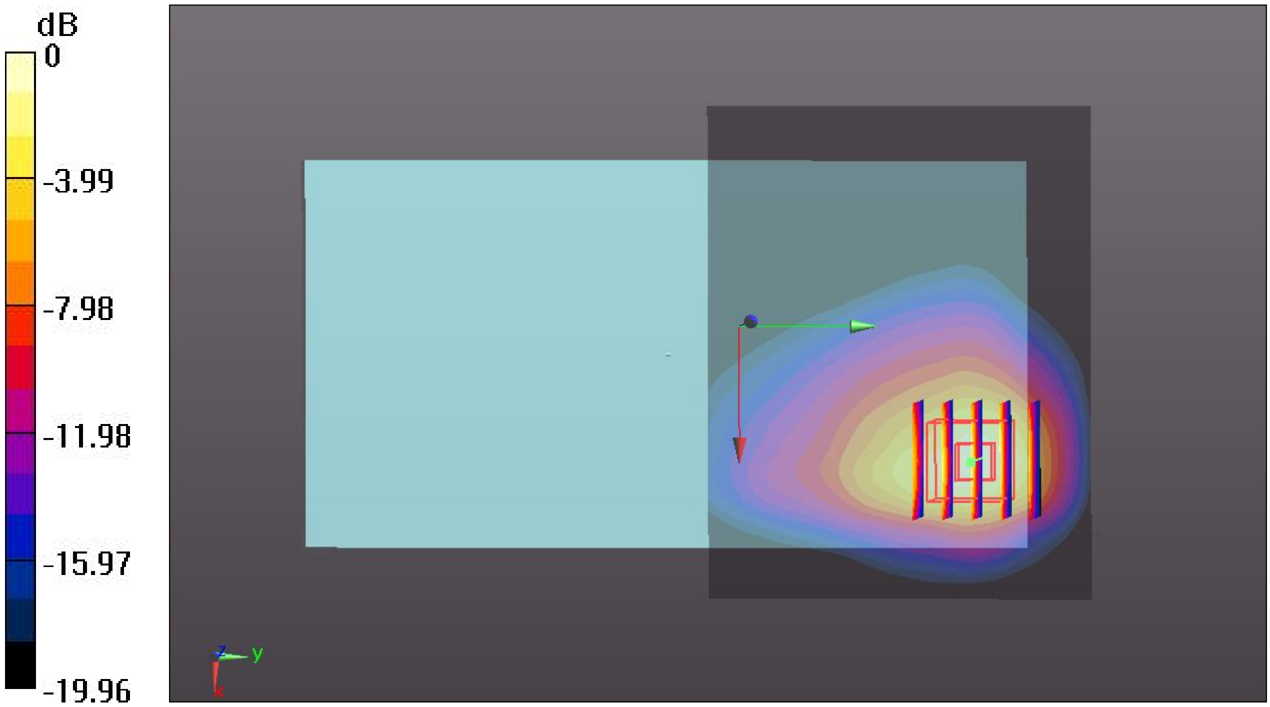
#12_WCDMA Band II_RMC 12.2Kbps_Bottom Face_0mm_Ch9538

Communication System: UID 0, UMTS (0); Frequency: 1907.6 MHz;Duty Cycle: 1:1
Medium: MSL_1900_150626 Medium parameters used: f = 1907.6 MHz; σ = 1.551 S/m; ε_r = 53.514; ρ = 1000 kg/m^3
Ambient Temperature: 23.3 ℃ ; **Liquid Temperature**: 22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(7.39, 7.39, 7.39); Calibrated: 2014.11.13;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2014.12.11
- Phantom: SAM3; Type: QDOVA002AA; Serial: TP:1149
- Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

Ch9538/Area Scan (91x71x1): Interpolated grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.63 W/kg

Ch9538/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0.492 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 2.31 W/kg
SAR(1 g) = 1.110 W/kg; SAR(10 g) = 0.547 W/kg
Maximum value of SAR (measured) = 1.68 W/kg



0 dB = 1.63 W/kg

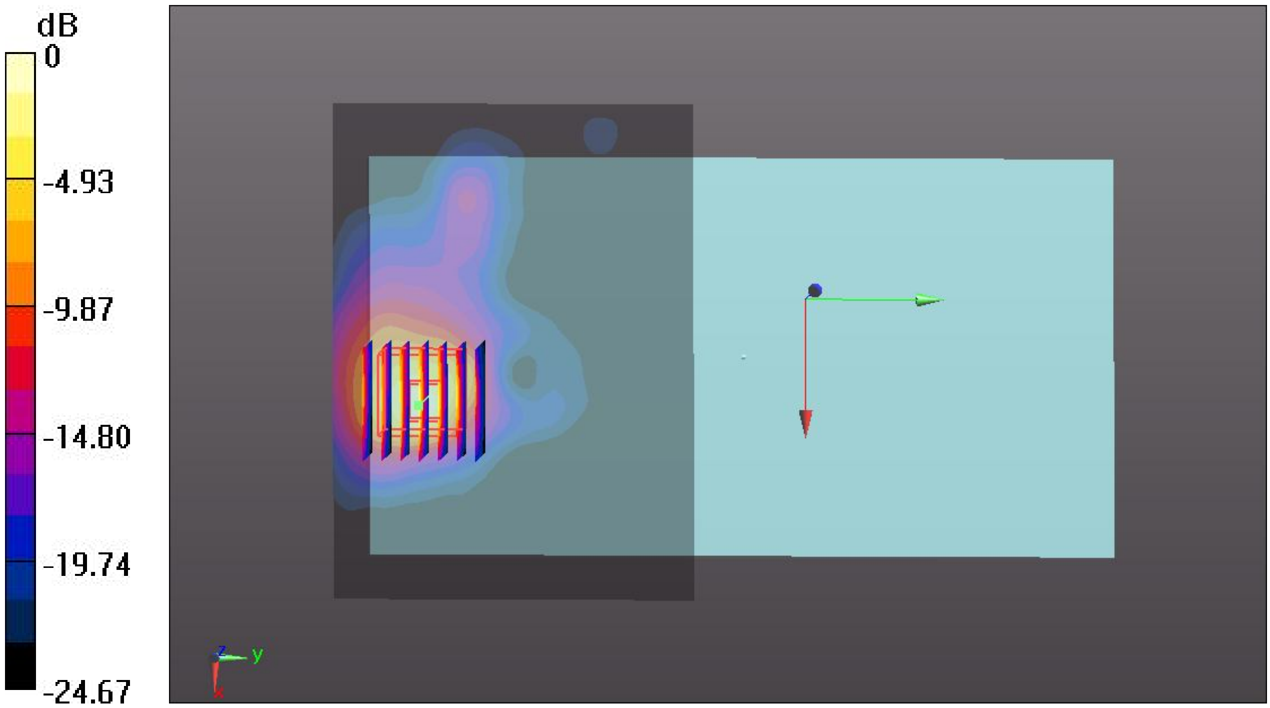
#13_WLAN2.4GHz_802.11b 1Mbps_Bottom Face_0mm_Ch11

Communication System: UID 0, WIFI (0); Frequency: 2462 MHz;Duty Cycle: 1:1.018
Medium: MSL_2450_15028 Medium parameters used: f = 2462 MHz; σ = 2.012 S/m; ε_r = 52.233; ρ = 1000 kg/m^3
Ambient Temperature: 23.4 ℃ ; **Liquid Temperature**: 22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(6.95, 6.95, 6.95); Calibrated: 2014.11.13;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2014.12.11
- Phantom: SAM3; Type: QDOVA002AA; Serial: TP:1149
- Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

Ch11/Area Scan (111x81x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 1.93 W/kg

Ch11/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.387 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 2.81 W/kg
SAR(1 g) = 0.969 W/kg; SAR(10 g) = 0.344 W/kg
Maximum value of SAR (measured) = 1.73 W/kg



0 dB = 1.93 W/kg

Test Laboratory:Sporton International Inc SAR Testing Lab Date: 2015.06.28

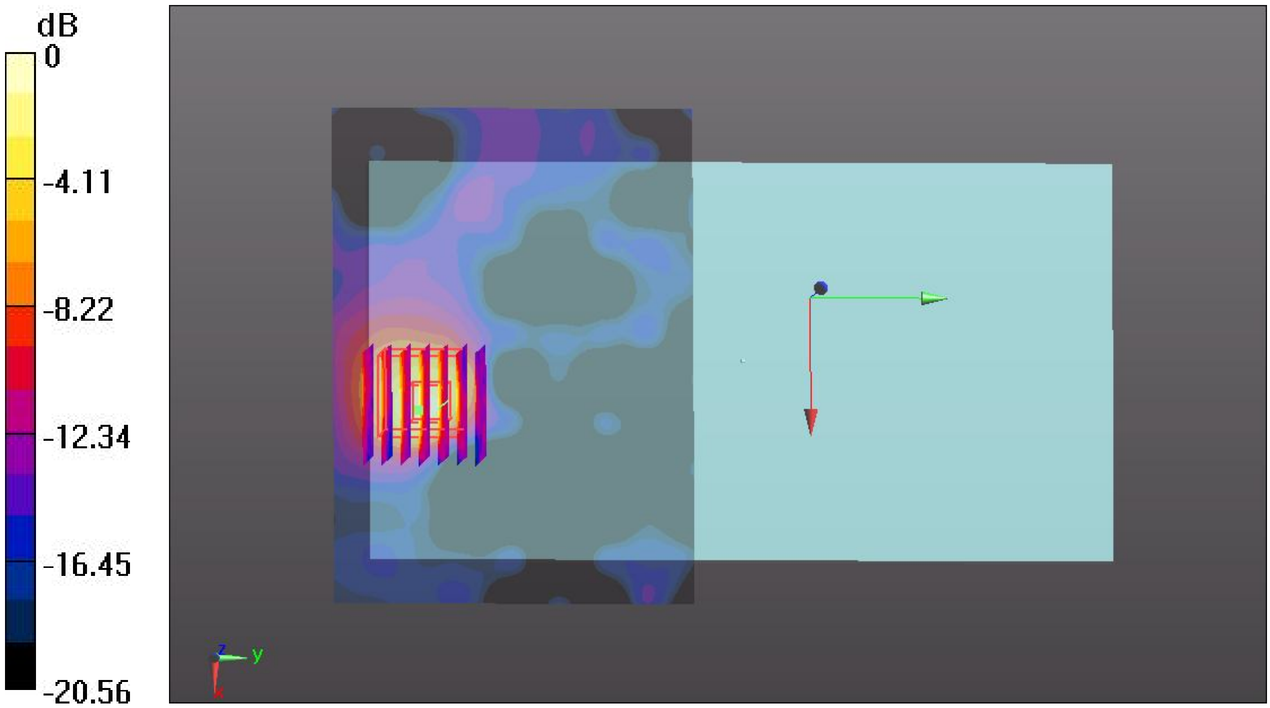
#14_Bluetooth_1Mbps_Bottom Face_0mm_Ch78

Communication System: UID 0, Bluetooth (0); Frequency: 2480 MHz;Duty Cycle: 1:1.2
Medium: MSL_2450_15028 Medium parameters used: f = 2480 MHz; $\sigma = 2.044$ S/m; $\varepsilon_r = 52.15$; $\rho = 1000$ kg/m^3
Ambient Temperature: 23.4 ℃ ; **Liquid Temperature**: 22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN3819; ConvF(6.95, 6.95, 6.95); Calibrated: 2014.11.13;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2014.12.11
- Phantom: SAM3; Type: QDOVA002AA; Serial: TP:1149
- Measurement SW: DASY52, Version 52.8 (7);SEMCAD X Version 14.6.10 (7164)

Ch78/Area Scan (111x81x1): Interpolated grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.135 W/kg

Ch78/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.995 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.196 W/kg
SAR(1 g) = 0.072 W/kg; SAR(10 g) = 0.028 W/kg
Maximum value of SAR (measured) = 0.118 W/kg



0 dB = 0.135 W/kg